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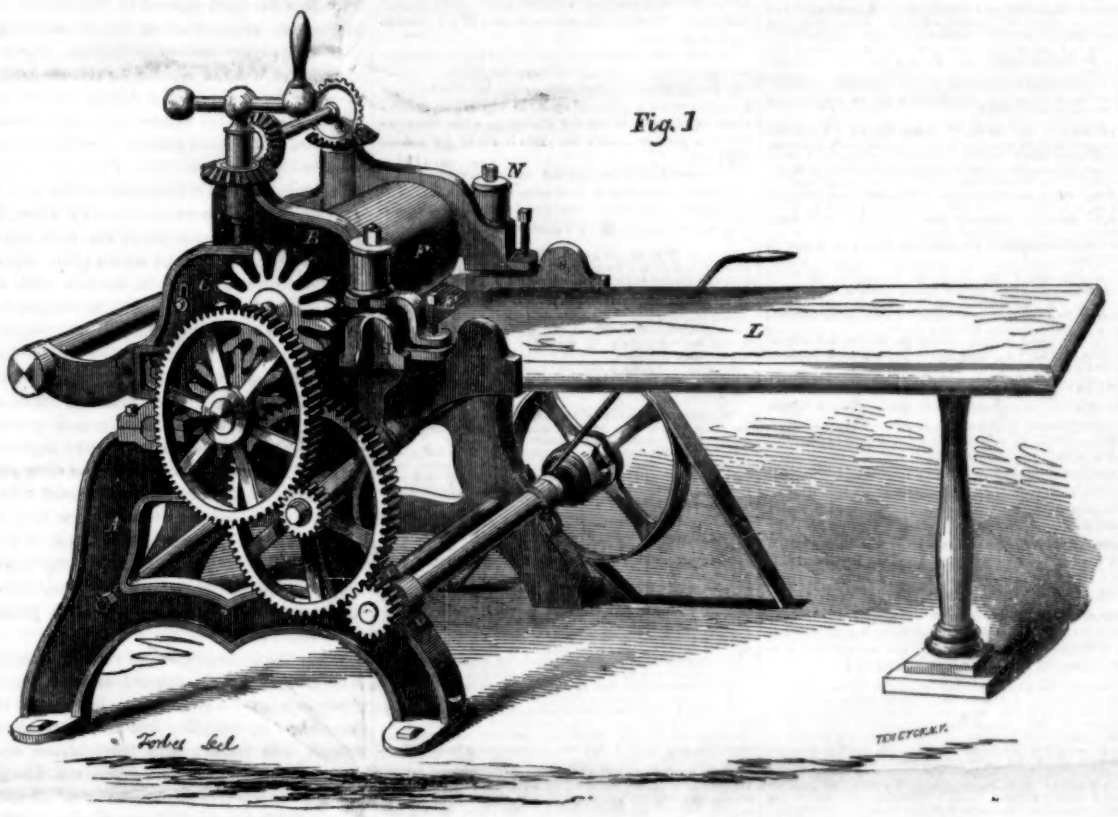
BARLOW'S WOOD PLANING MACHINE.

Fig. 1



Improved Wood Planing Machines.

The accompanying engravings are views of the improved Wood Planing Machine for which a patent was granted to Nelson Barlow, on the first of July last.

Figure 1 is a perspective view of the machine, and fig. 2 is a section exhibiting the radial action of the upper frame and connections.

The general principle of the invention consists in passing planks over a cylindrical cutter of the usual form, which revolves in fixed journals in the frame of the machine, and over a fixed roller or bed in front of the cylinder, while the planks are pressed down by an improved self-adjusting frame acting upon their upper sides, and they are, by this means, brought to a uniform thickness.

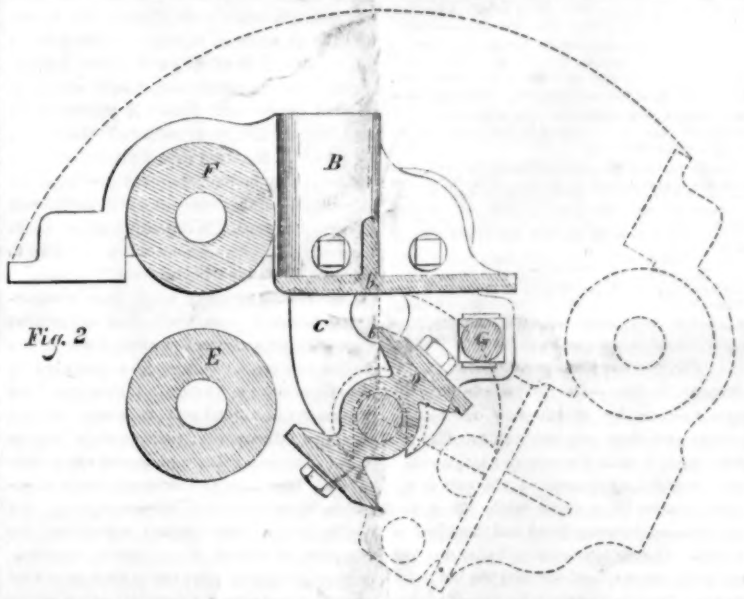
A is the main frame of the machine. It has suitable bearings to receive the shaft of the cutting cylinder, D, fig. 2., which is armed with cutters of the common form, and which revolve and cut in a direction against the advance of the plank. Inside of the bearings of cylinder D, there are other large bearings that receive a projecting hollow axle, formed upon the sides of the standards, C, through the center of which the shaft of the cylinder passes.

B is an upper frame attached to and resting upon standards, C C. This frame can be raised and depressed by adjusting screws to set it, for planks of various thicknesses. It has a plate, *b*, at its lower part, extending from side to side between the standards; this plate bears upon the surface of the plank while being planed. In the forward part of frame B, the upper driving roller, F, is placed; its under side being in a true line with the plate, *b*. The under driving roller, E, is parallel with the first, and is attached to the main frame in an unyielding position. After the plank passes the cutting cylinder, and has been reduced, it rests upon and is supported by the small roller, G. As this roller is connected with the standards, C, and they being connected to the cylinder shaft by a hollow axle, it follows that this roller occupies a fixed relative position to the under side of the plank and to the cylinder; no adjustment of it, therefore, is necessary for planks of different thicknesses. A bar may be used in place of this roller, or the table may extend out from the machine to support the planks. L is the feeding table; the part, O, to which it is attached, is connected with the cross rail of the main frame on an axle, by which it can be moved up or down, or it may be connected with the shaft of the lower roller. H, fig. 1, is a connection or link which, through the medium of the rubber spring, N, attaches the upper frame, B, to the lower frame, A. By the elastic pressure of this link, it controls the action of the upper frame, giving such an amount of bearing force upon the plank as may be necessary. This link has a lip at its lower edge that fits into a recess in the part O, and there is a recess on its upper part to match it into the frame, B. These connections are removed when the cutters require to be sharpened; this leaves the frame, B, free to be swung over, and when in this position the cutters can be sharpened or adjusted with ease.

When a plank enters between the feeding rollers, F E, the upper one rises (being under elastic pressure) as the forward part of the upper frame rises. The frame, B, together with the plank, is then inclined, which incline is greater or less, according to the surplus wood of the plank. As the plank passes forward from the rollers, its upper side rests against the bearing plate, *b*, with a considerable pressure, because the weight of the plank acts upon the lower roller as a lever, and also because of the inclined position of the plate. This prevents the cutters from taking too deep a hold and marring the ends of the plank on entering the machine. In passing out of the machine, the small roller, G, acts as a similar agent in connection with the weight of the plank, to keep the rear end of the plank in firm contact with plate *b*. The driving rollers occupy at all times parallel positions, thereby bearing equally upon the plank, thus exerting a uniform feeding force.

This planing machine differs from some others by being arranged to plane the lumber upon its under side. The cutting cylinder is thus enclosed, which removes to a great degree the annoyance from dust and liability to accident, and which also saves the surface of the plank from being marred by indentations from the chips, &c., and prevents, by the upper frame, B, their ends from being scored on entering and leaving the cutters. The feeding rollers, E and F, have fixed bearings, the former upon the main frame, A, and the latter in the self-adjusting frame, B, which frame is held down by the springs, N N, to the plank. The frame, B, is connected with the stands, C, which are attached to the frame, A, by means of axles around the shaft of the cutting cylinder, and can be swung over readily upon these centers whenever it is desirable to obtain access to the cutters for sharpening, &c., as stated. Changes of thickness are made in the most convenient manner, by raising or depressing the upper frame, which is alone adjustable, and the machine is thus reduced to the smallest possible number of adjustable parts.

Fig. 2



The space occupied by the machine is small, being only about four by three feet, and the power required to operate it is comparatively trifling. It is especially adapted as a shop machine, where it is desirable to save power and room. It will plane lumber twenty-two inches in width and under, and from one-fourth to two and one-half inches in thickness.

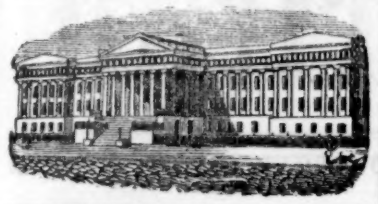
One of these machines is on exhibition at the Fair of the American Institue, in the Crystal Palace, and more information may be obtained by letter addressed to Alfred Conger agent, 345 Broadway, this city.

Wild Fruits in Australia.

In this country there is almost total absence of wild fruits. There is scarcely a nut, berry, or wild fruit of any kind. No apples, no plums, no grapes. There is a species of cranberry, the fruit of which grows under the plant, but this is extremely rare; and there is a fruit called the quandong, which has a large stone, and seem to resemble a plum. Edible roots are as few. In fact, except a very rare sort of fungus, growing in the ground, called native bread, which the natives roast and eat, and the small root called the murnong, the natives have no vegetable food. But it is a country which takes kindly to any fruit, root or vegetable that civilized man brings into it; and will doubtless, one day, be as affluent in all these riches of nature as any land on the globe. The peach flourishes; the same is the case with the vine and the fig.

Extensive Flour Mills.

There are sixteen flouring mills, with eighty-four run of stone, capable of manufacturing about ten thousand barrels of flour per day at Oswego, N. Y. There is perhaps no point in the United States, or in the world, where the manufacture of flour is conducted upon so large a scale as in Oswego. The facilities for handling grain are extensive; the elevating capacity being about thirty-six thousand barrels per hour, and the storing room equal to about two milions two hundred thousand bushels.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING OCT. 16, 1855.

DUST DEFLECTOR FOR WINDOWS OF RAILROAD CARS—James H. Cook, of Taunton, Mass.: I do not claim the application of a curved deflector on the outside of the window opening of a railway carriage, nor making the same to extend under the window and up one side thereof.

But I claim the rotary deflector or ventilator, constructed and made to operate substantially in the manner and for the purpose specified.

FAUCET—Albert Fuller, of Boston, Mass.: I claim the use of the devices employed for insuring the accurate sealing of the valve, when actuated by a crank, or other positive motion, the same consisting of the screw rod, K, traveling in the female screw of the nut or eye formed on the valve stem, and being cut, constructed, and arranged with regard to the screw shaft, I, so as to operate with the same, as described, whereby the valve and valve stem, when the plug is drawn upon its seat, are brought into the exact position required for enabling the valve to find its proper seat.

BENCH HOOK—A. Hotchkin, of Schenevus, N. Y.: I claim the construction of the bench hook as shown and described, viz.: having the catch or stop, C, attached by a joint, b, to a plate, B, said catch or stop being provided with a shank, d, against which a spiral spring, g, acts, and also provided with a segment bar, D, having holes, h, in one side, in which a spring pawl, E, catches, and retains the catch or stop in the desired position.

[Bench hook is the name given by carpenters to the little spur of iron against which they place one end of the stuff they happen to be planing, to prevent the same from slipping. Some carpenters drive in a nail at the head of their benches, and make it serve as a hook; others use a hocked spike. In both cases there is more or less trouble to lift the hook and set it to suit different kinds of work.

The present improvement consists of a small metallic frame, having in its center a pivoted tongue—like the tongue of a buckle; the frame is let in and fastened flush with the bench. The tongue serves as the hook, and as it may be instantly elevated or depressed by the finger, it manifestly possesses much advantage over the common hooks in point of convenience. The lower side of the tongue is notched, like a rack, and there is a spring pawl to match the same. This part of the contrivance is to hold the tongue firm in any desired position.]

PROJECTILE FOR ORDNANCE—Andrew Hotchkiss, of Sharon, Conn.: I claim, first, constructing a shot or projectile capable of being fired from a cannon having rifle grooves, said shot consisting of three parts, two of which parts are of hard metal, and the other of some flexible expansive material, in the form of a band or ring, attached to one of the hard metal parts, and overlapping the edge of the other, in such a manner that either by the act of loading or of firing, or of both, the said ring shall be so expanded or distended that it shall take the impression of the grooves, and be made to fit the bore, as described.

Second, I claim the tail-piece for securing the cap to the body of the shot, and as a guide to the cap, on the forward motion, in the manner described.

EXCAVATORS—Benj. Hancock, of Troy, N. Y.: I claim, first, the dumping scoop, constructed, arranged, and operated substantially as described, and for the purpose specified.

Second, in combination with the above, the movable and adjustable frame, as described, for the purposes set forth

VISES—Jasper Johnson, of Geneseo, N. Y.: I disclaim the construction of vises where a distinct adjustment is requisite for grasping the article, previous to the tightening of the jaws by lever power, as in the patented vise of Cove, and the rejected vise of Pardee, such constituting no part of my invention.

But I claim the combination of lever, F f i, swinging lugs, l and rack, E, with one jaw, A, fixed, and one, B, movable, in the direction of the rack, arranged and operating as specified, to grasp and tighten by one continuous movement of jaw B, and admitting of change of capacity without adjustment therefor.

WASHBOARDS—Jos. Keech, of Waterloo, N. Y.: I disclaim, expressly, the curving of the corrugation, as patented by Lester Butler in 1852.

But I claim constructing the operating face of washboards of a laterally depressed and centrally elevated corrugated surface, substantially as specified, for increasing the effective operation of the board, in the manner set forth.

SEED PLANTERS—Ebenezer McCormick, of Connellsville, Pa.: I claim so arranging the drag, B, with its link and guides, and the wheels, A A, with regard to a seeding and covering apparatus, such as described, as that they shall be guides and markers for directing the dropping of the seed at stated intervals, as set forth.

WRINGERS FOR CLOTHES—John McLaughlin, of Steubenville, O.: I claim the serrated rotary drum, in combination with the ratchet levers, C and E, constructed, arranged, and operating as and for the purposes specified.

SEWING MACHINES—Isaac M. Singer, of New York City: I claim the method, substantially as described, of protecting the needle from all injury by the interposition of a movable shield between the needle and shuttle, which is removed after the needle has descended, to permit the shuttle to pass between the needle and the thread, as set forth.

[This appears to be a very useful invention. Mr. Singer is a most prolific genius in the way of sewing machines. His improvements are generally good and practical.]

GRAIN SEPARATORS—Benj. Wright & John Boan, of Hudson, Mich.: We do not claim the cylinder, concave, and fan separately, for they have been previously used.

But we claim the employment or use of the rotating screws, B D, and shoe, E, when arranged substantially as shown and described, whereby the straw is carried through the screens and the grain shaken therefrom within the screens, as described.

[This separator is composed of a revolving screen having a flat screen of the common kind extending through its interior, from end to end. The grain and chaff to be separated are fed on the flat screen, which is inclined and made rapidly to vibrate; this vibration causes the straw to pass through, out of the machine, while the grain and finer chaff fall through on to the revolving screen. A blast of air from a fan is sent along through the machine, beneath the flat screen, and the light dust, as fast as it drops, is swept away. The grain rolls on the revolving screen long enough to sift out any remaining impurities, and finally pours out, at one end of the machine, in a clean pile by itself. This is a very simple, cheap, and effective separator.]

CHURNS—Lewis P. Pease, of Mount Carmel, Ill.: I claim the winged dasher, formed by two series of curved paddle, as described, rotating around axles projecting outward, and slightly upward, from a vertical shaft, the said paddles of each series forming a conic frustum, revolving with its lower edge parallel to the tub bottom.

BREECH LOADING FIRE ARMS—H. B. Weaver, of South Windham, Conn.: first, I claim combining the hammer with the laterally swinging chamber, for the purpose of effecting the simultaneous opening of the chamber and cocking of the hammer by means of the lever, D, the pin, K, slide, d, and lever arm, c, all operating substantially as described, whether the said slide, d, be a priming slide, or simply employed to connect the chamber, A, with the lever, D.

Second, I claim combining the priming slide, d, with the lever, D, and the hammer, F, by means of a pin, l, attached to the lever, working in a slot, n, in the slide, or a link attached thereto, so that the lever, D, will draw back the hammer before moving the slide far enough to allow the pin, h, or its equivalent, through which the hammer strikes the cap, to move out of the receiving hole in the slide before the slide is acted upon by the lever, substantially as set forth.

[In this improvement there is a movable chamber at the breech of the gun for receiving the cartridge, the chamber being hinged so as to open up, laterally, like the lid of a snuff box. The opening and closing of the chamber is effected by means of a trigger guard lever located underneath the stock, the same as in most of the breech-loading fire arms.

There is also a very ingenious self-acting contrivance for putting the percussion caps upon the nipple.

By the act of opening the cartridge chamber the hammer is cocked and a cap placed upon the nipple; all that remains to be done is to slip the charge into the chamber and close the same, when the piece is ready for instant discharge.

The operations of opening the chamber, cocking, capping, &c., are performed with ease and precision. The mechanism occupies but little space, is simple, and cheap. We regard it as an excellent improvement.]

IMPACT WATER WHEEL—Hiram Morris, Elijah K. Gorton, & Edward Saeger, of Crawford County, Pa.: we claim, first, the buckets, so constructed as to be adjusted and movable, to open and close the issues as may be desired, by means of the circular grooves in the rims of the wheel and flanges on the buckets, and the studs and bolts passing through the buckets, and the fastening the buckets in any desired position by means of a latch and catch, in the manner described.

Second, we claim a circular concave packing ring and decking, with the adjusting box, constructed in the manner described.

WASHING MACHINES—Chas. Love, of Peru, Ill.: I make no claim to rollers or brushes, as applied to washing machines and separately considered.

But I claim the construction within the tube and above its bottom, of a rack composed of radial fluted cones, each capable of an independent rotation, arranged and supported as described, and operating as set forth, for facilitating the washing operation.

KNITTING MACHINES—John H. Doolittle, of Waterbury, Conn., assignor to the "American Hosiery Co." of same place: I claim the method of producing the feed motion by means of a feed bar with teeth formed upon it, of proper shape, to engage with, and move or feed the series of needles, substantially as described.

Second, I claim the method of reversing the feed motion by means of the inclined planes, k and l, spring bars, m and n, swinging bar, p, and the cam grooves, h and i, when constructed, arranged, connected, and made to operate in the manner substantially as described.

Third, I claim attaching the blocks or inclined planes, l and m, to the needles in such a manner that they will always operate at the end of the course, without reference to the number of needles used, substantially as described.

Fourth, I claim the method of working the counting apparatus, in combination with the method of throwing the machine out of gear, when the parts are arranged, constructed, and made to operate, substantially as described.

SEED PLANTERS—F. G. Wynkoop, (assignor to H. L. Edson,) of Corning, N. Y.: I claim the construction and arrangement of the spades, C C, with the tube, L, when attached to and operated upon by the slide, G, for the purposes above described.

INKING APPARATUS FOR CARD PRINTING PRESSES—Danl. K. Winder, of Cincinnati, O.: I claim, first, the double armed rock shaft, S, and outward pressing roller frame, G, or their equivalents, in combination with the platten and the springs actuating the arm, m, of said rock shaft, constructed, arranged, and operating substantially as, and for the purposes specified.

Second, the above mechanism for operating the inking roller, combined with the supply roller, E, actuated by the movement of the platten, substantially as specified.

EXTENSION REACH FOR CARRIAGES—Edwin Wilson, of Prattsburg, N. Y.: I claim connecting the reach, C, to the center piece, F, of the hounds, G, by means of the cogged bars, D D, slide, E, and clasp, I, constructed and arranged substantially as shown and described.

[In common lumber wagons the ends of the reaches overlap, and are secured together by means of a pin: in order to render the length of the reaches changeable, their ends are bored with holes, placed at different distances, through which the pin passes. Reaches thus bored and fastened are weak, and frequently break down.

The present improvement consists in placing a series of rack teeth on the ends of each reach, so arranged that the teeth of one rack fit into those of the other; when the two racks are united a sliding ring collar is employed to hold them together. In order to change the length of reaches, it is simply requisite to loosen the collar, set the racks as desired, and bind them again with the collar. Reaches thus furnished are not bored, and are therefore much stronger; the coupling is also much more rigid than the old plan. This is a good invention and worthy of extensive introduction.]

CASTING TEAPOT SPOUTS AND HANDLES—Theodore Ackerman (assignor to H. H. Homan, Wm. Muhle, and Theodore Ackerman,) of Cincinnati, O.: I claim the use of an inner, non-conducting layer to the metallic interior surface of the cope or sprue gate of a teapot spout mold, or analagous object, in the manner and for the purpose described.

DESIGNS.

COOKING STOVES—James Wager, of Troy, N. Y., two designs.

PARLOR STOVE PLATES—James Wager, of Troy, N. Y.

To Pay Out a Submarine Cable.

MESSRS. EDITORS—As you have become the great medium by which new mechanical thoughts and ideas are communicated to the public mind, I will describe a plan, which, I think, would have prevented the loss of the telegraph submarine cable while being laid down between Newfoundland and Cape Breton. It is this: The cable should be "paid out" at, or near the center, and through the bottom of the ship. The box for working a center-board in a vessel will give the idea of communication through the bottom. With one or more sheaves fixed in the box, the telegraph could be reeled off and out handsomely, either in a smooth or rough sea. The weight and strain would always be where they should be, viz.: at a point in the vessel nearer stationary than any other.

G. B. Jr.

[For the Scientific American.]

On Preserving Fruit.

(Concluded from page 43.)

Atmospheric changes have very great, if not the most powerful of all influences detrimental to the preservation of fruits. First, as regards their calorific effects; second, their hygrometrical. In the former respect, the expansion and condensation occasioned by the rise and fall of temperature, must work a change in the state of the juices, doubtless often at variance with the gradual chemical change which those juices naturally undergo. Hence, those fruits that are most exposed to vicissitudes of temperature, are most apt to fail in attaining their full sugary mellow perfection. Again, when warm weather suddenly succeeds cold, the air in the room is of a higher degree of temperature than the various substances, until such time as the latter acquire from the former an equality of temperature. Fruit, &c., from its coldness, acts as a condenser of the vapor existing in the warmer atmosphere by which it is surrounded. The surface of the fruit consequently becomes covered with a great deposition of moisture, as will be the case with a glass filled with water colder than the atmosphere of the room into which it is brought. It is a known fact that fruits and vegetables possess a temperature higher in winter than that of the air generally by which they are surrounded, this, as well as other causes given, produces chemical action in different degrees. In some substances eremacausis, or decay, is the result. An atmosphere saturated with moisture will cause these to take place in fruit and vegetables. As soon as the action of the air ceases, that is, as soon as deprived of oxygen, the humas suffers no further changes. Substances that contain nitrogen are most prone to putrefaction.

When the decomposition of such substances is effected, with the assistance of water, their nitrogen is invariably liberated in the form of ammonia. Hydrocyanic acid and water when brought into contact with muriatic, are decomposed into formic acid and ammonia. Charcoal has the power of condensing ammonia and formic acid before reaching the freezing point. Chloride of calcium has also the property of absorbing a great quantity of moisture (double its own weight,) and then becomes liquid; in this state it is important to save the liquid, as it may be put in a brass kettle, and placed over the fire, where it will soon evaporate to perfect dryness, and be as good as before. This does not absorb the carbonic acid set free by the fruits—it is important that this be retained in the atmosphere. Light is also found to be injurious to fruits. All men having experience, agree that they keep best in total darkness.—This arises from a specific stimulus being exercised upon the vegetable tissue by this agent. Light causes evaporation; as soon as it is withdrawn it ceases. Guy Lussac has shown that the atmosphere coming in contact for a short time with fruit, &c., will cause fermentation; this would continue, though not long, exposed to the air. Decay is prevented by cold, dryness, &c., many salts and absorbents. He says, "It is a fixed rule, without exception, whatever may be the cause that produces the decomposition, that every azotized constituent of animal or vegetable organism enters spontaneously into putrefaction when exposed to moisture and a high temperature."

Eremacausis or decay takes place in organic substances in contact with air or oxygen, but these changes do not occur when water is excluded, or when the substances are exposed to the temperature of 32 degs. Liebig says, "the phenomena of animal and vegetable life are peculiar to themselves; they stand in certain relations to each other, and depend on certain causes. Heat alters the original mode of arrangement of the atoms, and consequently the equilibrium of their mutual attraction. No organism, no portion of an animal, vegetable, or plant, is capable, after the extinction of vital energy, of resisting the chemical action which air and humidity exercise upon it."

Preservation of fruits is a subject now demanding thorough investigation; its present and prospective importance, in a commercial point of view, is worthy of serious and immediate attention. Millions of bushels of choice fruit are at present rotting on the ground, and thus large quantities of good nutritious food is lost to the human family. The keeping of the fruits in winter, and the packing of them for distant markets, are questions that concern deeply the extensive fruit growers in this country. The fruit garden cannot give the results expected from it if we are deprived of its products from February till July, when the earliest fruits begin to ripen. This question concerns producers and consumers, also those who deal in fruits, and who, without proper modes of keeping, are exposed to great losses. How very desirable for all living in large cities that the present surplus fruits be preserved till next spring, so that they might have the comfort of having cheap grapes, pears, apples, pumpkins, &c. All this will yet be accomplished. From what has been collected from various sources, we may conclude that a method of preventing the decomposition of the fruit without the use of any substance which shall injure its flavor, either by the addition of a new flavor or the destruction of the natural one, is what is wanted. Many methods are useful on a small scale, but it appears to me the trouble and expense attending is too much for the quantity preserved. In No. 45, SCIENTIFIC AMERICAN for 1855, the principles and construction of my Preservatory are explained and illustrated; apples and pears should be packed in good oak barrels, resting on their sides in tiers not more than four feet high. If the ice be kept as directed, the temperature will be from 40 degs. to 45 degs. In proportion as the seven following conditions are fulfilled in the fruit room, will the result be satisfactory:—First, that the temperature be 10 degs. above freezing. Second, that it be uniformly equal. Third, that the fruit room be dark. Fourth, that the atmosphere be more dry than humid. Fifth, that the carbonic acid disengaged from the fruit be retained in the room. Sixth, that the air be sweet,—the arrangement of the Preservatory with absorbents or screen will keep it pure and wholesome. Seventh, that the pressure of the fruits so placed is reduced, as far as possible. All these are attained by the Preservatory, and by no other method. Some of the apples, of various perishable kinds, preserved in this way, were given, in June last, to the editors of the *Tribune*, *Times*, *Sun*, and SCIENTIFIC AMERICAN, and were spoken of by them, at the time, in the most flattering terms. I hope fruit growers and consumers will thoroughly investigate, and practice the best mode. "Hold fast to that which is good," so that sound fruit, having its aroma retained, not substituted by alcohol or sugar, be plentiful at all seasons of the year. Also dairy products—eggs, meats, &c., &c. All these are kept fresh by using the Preservatory.

W. D. PARKER, Patentee,

No. 201 Washington street, New York.

Hussey's Reaper and Atkins' Automatic Raker.

MESSRS. EDITORS—Your remarks on page 29, this Volume SCIENTIFIC AMERICAN, under the head of "Atkins' Self-Raker in France," is calculated to do me injustice. The term Atkins' Self-Raker will be understood by ninety-nine-hundredths of your readers to mean the whole machine; if not so, it most effectually leaves me out of the question. It is very true that I did not invent one particle of the Automaton Rake of Mr. Atkins'; it is equally true that this Automaton Rake is used on a machine invented by myself. Deprive the machine of Mr. Atkins' invention, and it would still be a "Hussey Reaper." Deprive it of my invention, and it would be no reaper at all. I conveyed to J. S. Wright, of Chicago, by written agreement, several years ago, the privilege of using, for a limited period, my invention, for the purpose of adding the Atkins' Self-Raker to it.

Knowing your love for fair play, you will set this matter right. OBED HUSSEY.

Baltimore, Md., Oct. 16, 1855.

Good Shooting.

A great shooting match, at pigeons, on the wing, took place on the 8th inst., at Cincinnati, Ohio, between W. King, of Georgia, and R. Duncan, of Louisville, Ky. Mr. Duncan was the victor. Each party had seventy-five shots, two pigeons being let out at each shot. Duncan shot 130 birds, and missed 20; King shot 129 birds and missed 21. The wager was $10,000, and the money was lost by a single bird only.

American Prizes at the Paris Exhibition.

We have no doubt of the fact, that in proportion to the number of exhibitors, the United States will receive a larger number of prizes relatively, than any other country. This is certainly something for which every American can feel a just pride.

A recent correspondent of the *Tribune* states what appears to us will very likely prove true in reference to the awards:

"Of the reapers and mowers, McCormick takes a gold medal, Manny and Wright each a silver medal. The Emperor has purchased McCormick's machine, the one which operated so beautifully at La Trappe, for the Conservatoire des Arts et Metiers.

Pitt's (Buffalo) thrashing machine takes a gold medal. Manufactories of this machine will soon be established at different points in France.

Blanchard's machine for bending wood takes a silver medal. The machine by the same inventor for cutting and sculpturing busts, meets no sympathy from the French jury.

Of the sewing machines, Singer of New York, and Mangin of Lyons, France, take gold medals, the other American machines silver or bronze medals. The jury awards a medal to the French machine, not on account of any general superiority over the American machines, but because of a new improvement which is thought to possess value. (The reader will recollect that the juries were instructed by Prince Napoleon to look particularly for new ideas and new principles not heretofore brought to public notice.)

The vulcanized india rubber of Goodyear receives a gold medal.

In dentistry, Fowler & Preterre, of New York, established in Paris, take a silver medal, the only medal awarded to this branch.

Colt's guns and pistols will not obtain more than a third-class medal or an honorable mention. These instruments met with immense opposition from the start, on the part of the French members of the jury and the large number of competitors from France and Belgium, and thus the few friends of the Colt pistol who were found on the jury were overpowered.

Richmond's machine for cutting iron for steam boilers, &c., receives a silver medal.—The manufacture of this machine is to be commenced immediately in France, and the inventor is in a fair way to receive large profits from its sale.

Some difficulty has arisen in regard to the silver medal awarded to the piano of Ladd & Co., of Boston, but it is not believed that the decision has been definitely changed.

Lieut. Maury's maps and charts have received a medal, but I have not ascertained of what class.

Thus about twenty gold and silver medals are certain, which gives a medal to every eighth exhibitor, a higher proportion of first class medals than will be received by any other nation. There may be more than these awarded, and without doubt there will be several bronze medals and honorable mentions, but these have not yet transpired. Then, again, when the Grand Council meets to inspect the awards of the individual juries, and to "eliminate" an overplus of awards, some of the American exhibitors may be cut down. However the result will soon be known, as notice has already been given to the exhibitors occupying the transept of the Palace that they must in a short time remove their articles in order that the whole of the grand gallery may be free for the ceremony of the distribution of the medals.

Tousley & Reed, of New York City, exhibitors of an oscillating engine, have made the grand hit in the American Department.—This engine, which is the invention of Mr. Reed, and I believe only a year old, is considered one of the most remarkable advances in the science of machinery which is to be found in the Exhibition, and receives in consequence a silver medal. M. Periere, the great railroad king of France, pronounces it one-half better for railroad purposes than any engine in existence. This gentleman has taken it under his powerful protection, and is going to adopt it immediately on four of the leading railroads of France, in which he is the largest stockholder and most influential director. Mr. Reed's fortune is thus made sure, for with M. Periere's influence, this engine will not be long in becoming European.

The encouragement thus far met by the American inventors who have brought their inventions to the Exhibition has been so satisfactory in a pecuniary point of view, to say nothing of the honor, that it will be, for a long time, a source of regret that more of our useful inventions had not been brought over; and this remark applies particularly to agricultural instruments, which seem to have been seized with great avidity by the French agriculturists.

Fatal Submarine Experiment.

Messrs. Editors—It is my painful duty to request a small place in the columns of your valuable paper, to give an account of the end of my unfortunate friend Henry Levy, for the instruction of those interested in submarine matters.

The apparatus he used for his experiments consisted of an india rubber armor, with a metallic helmet. It dispensed with the air tubes and force pumps used at present with the ordinary armor, instead of which he had a supply of oxygen gas, enclosed in an india rubber receiver, attached to his body. The flow of the gas was regulated by means of a tube and faucet; and a vessel containing slacked lime and caustic soda, placed on his breast, was intended for the absorption of the carbonic acid gas expelled from the lungs. His ballast was composed of a sufficient quantity of leaden weights attached to different parts of his body. Several experiments had already been made with this apparatus with sufficient success to inspire, in the minds of all connected with him, complete confidence in the practicability of the process. At one time he remained twenty-five minutes under water. Another time he remained about one hour and fifteen or twenty minutes in the armor—part of the time under water, and the rest on land—and was enclosed air tight in his machine. The experiment which was the cause of his untimely death took place at Hunter's Point, L. I., on Friday, 11th inst., in the presence of several persons residing in New York City, who intended to apply the invention to immediate practical use. After being dressed in the armor he walked into the water a short distance, and returned, feeling unwell, and requested to be cooled. After this, in spite of our entreaties to postpone the experiment, he went in again, until he was about three feet below the surface. A rope was fastened to his helmet and held in his hands, for the purpose of giving signals and guiding him. Express orders had been given by himself not to draw him out on any account unless a particular signal was made. He remained 30 minutes below, giving, during that time, the signal that all was right. How this was done I do not know; perhaps it was caused by the motion of the water. At any rate, according to agreement he was withdrawn; and perceiving that something was wrong, we quickly cut the whole apparatus to pieces to liberate him, but, alas! the poor man was found to be dead! All our efforts to revive him were of no avail. A post mortem examination was held the next day by Coroner Boyd, of Flushing, and a verdict of "Death by suffocation in a submarine armor" was given. The unfortunate Henry Levy was about 28 years old, born at Strasbourg, France; he was a man of brilliant talents, and full of bright promises.

Louis Bonnet.

Glazing of Sheet Iron.

Messrs. Editors—Although not new, this process for protecting sheet and wrought iron by means of a thin coat of glass, may be of importance to some readers of the Scientific American. The inventor, Mr. Paris, of Bercy, near Paris, France, applies it to various articles, such as kettles, saucepans, chemical ware, stove pipe, gutters, roofing, &c., with complete success. The articles are first to be scoured bright, and washed with dilute acid, then dried and brushed over with a solution of gum arabic The glass is then dusted over them by means of a sieve. The ware is next dried in an oven, heated to 300 degs., then put into another oven, where it is brought to a bright red heat, until the glass is in a melted state, which is ascertained through suitable openings in the furnace. After this it is taken out, and put in a closed chamber, to prevent sudden cooling. If necessary, a second coat is to be put on in the same manner. The glazing is composed of 130 parts of flint glass, 20 1-2 parts of carbonate of soda, and 12 parts of boracic acid, carefully mixed and melted in a glass house pot. This glass, after casting and cooling, is pulverized under a steel pestle, and sifted through a bolting cloth; it is then fit for use. This covering for iron is transparent, and does not scale off, nor split, by the action of heat, and it resists sudden changes of temperature. Acids even concentrated and hot, do not act in a notable manner on the iron coated with this composition. On the other hand, boiling solutions of caustic potash or soda, seem to dissolve small portions of the silica and boracic acid.

Among the manifold applications of this process, is the very useful one to cooking implements, as a substitute to tinned ware; its advantages are cleanliness and absence of metalic taste in food. Stove pipe is, by this means kept from rusting. Among the latest applications is the coating of pots for sugar refineries, crystallizing vats for fatty acids, and other articles of sheet iron. It can be applied to the cast-iron plates used in candle stock presses, these plates and presses being liable to rust and stain the fatty matters. L. B.

Read's Patent Screw Wrench.

Fig. 1

Fig. 2

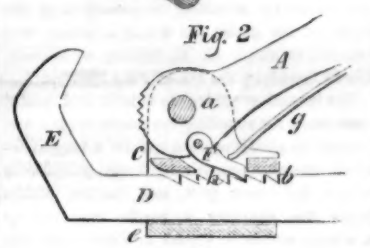
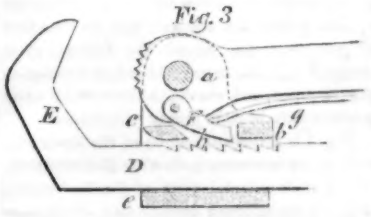


Fig. 3



The annexed engravings represent the improved Screw Wrench of George B. Read, of this city, who obtained a patent for it on the 1st of February, 1853, but which has never before been brought thus before the public.

Fig. 1 is a perspective view, showing how the wrench is used in screwing up a tube joint. Fig. 2 is a longitudinal section through the center, showing the parts where the wrench is ready for operation. Fig. 3 is a section showing the pawl free from the teeth in the movable jaw, to allow the latter to be adjusted, contracted, or expanded. The same letters refer to like parts on the three figures.

The nature of the invention consists in having the shank of the adjustable jaw pass through a recess attached to the stationary jaw by a pivot, and the shank of the movable jaw provided with a rack into which a pawl catches to retain it in proper position.

A is the metal stock of the Wrench, and B is the handle. C is a metal clasp, pivoted at *a* to the stock A. E is the movable jaw, having a shank, D, with teeth, *h*, on its inner edge. This shank works in a recess, *c*, in the clasp, C, and is retained in any part of this recess by the pallet, F. The head of the shank, A, is serrated, and forms the stationary jaw of the Wrench, opposite to the movable jaw, E. *c b* are two small division pieces in the inside of the clasp, C, between which the pallet, F, works; they are therefore guides to it; *g* is a flat spring secured at *f* (fig. 1,) to act under the tongue of the pallet, F, and retain it in place to hold the movable jaw firm while being used.

Operation—If it is desired to open or expand the jaws of the Wrench, the handle, A, and the inner end of shank D, are pressed together between the thumb and fingers, so as to squeeze them into the position shown in fig. 3. This act makes the spring, *g*, slip further under the pallet, F, which relieves it, and allows it to assume the position shown, viz.: freed from the teeth, *h*. The shank, D, of the movable jaw, E, can then be pushed further in or drawn further out of the clasp recess, *c*, to expand or contract the jaws—increase or lessen the space between E and the serrated head of the stock. The pallet, F, springs into place when the stock, A, and shank, D, are relieved of the squeezing pressure. In using the Wrench to expand or contract the jaws, it is held in the hand with the movable jaw on the upper side, and not on the under side, as shown in the figures.

By this arrangement of the jaws of the Wrench, their tendency is to press firmly upon a nut, or other object, while the handle, A, is being turned. The movable jaw is prevented being drawn out by a pin inserted in it near the end of its shank. It will be observed that while the jaws are acting on a square nut, or on a round object like the tube, fig. 1, their leverage is exerted to keep the pallet, F, in the teeth of shank D, and thus they are held remarkably firm to work. Owing to their particular form and relative position also, they will not slip on a nut; and they can retain within their grasp a round as well as a square object; this is a valuable quality in a Wrench. As has been explained, this Wrench can readily be adjusted to operate nuts, bolts, and tubes of different sizes and forms.

More information respecting it may be obtained by letter addressed to Mr. Read, at No. 217 Fifth street, this city, N. Y.

How to Attack Fortifications.

Messrs. Editors—In the Scientific American of 29th September, the article on "War Projectiles, &c.," you remark that "during the seige of Sevastopol the only effective means of making advances on the works appear to have been the old plan of sap and mine." It is surprising that the Allies have been building wrought-iron cannon-proof floating batteries, and have not thought of applying the invention of these batteries to assaults on land.—The immense amount of money, the extraordinary loss of life and time expended by the Allies in digging "parallels and covered ways" in the rocky strata on which Sevastopol is built, might possibly have been avoided, and the walls have been at once approached and battered down, if they had used batteries of wrought iron, as directed in one of your former numbers. Instead of being made to float, it might be mounted on rollers, and its parts be arranged so as to suit the new applications; for instance the guns might be moved along separately on their own wheels, &c.

Yankee Creole.

New Orleans.

[The idea of our correspondent is a good one. If thick wrought-iron plates can make effectual floating batteries, why may they not make excellent flying batteries and approaches against fortifications? This would certainly be a very excellent revival of the old method of attacking castles and walled cities by covered approaches moved on wheels, in which the workman wielded their battering rams with terrific effect. We recommend the plan to the contending powers of Europe; it is one which deserves to be tried against the north side of Sevastopol.

Health Seekers.

There are men who may be called martyrs of good health; not content with being well, they are always wishing to be better, until they doctor themselves into confirmed invalids, and die ultimately of too much health.

It is said that for Professor Agassiz's great work, which will cost $120 per set, there are already 10,000 subscribers in this country. This probably is the greatest subscription list any scientific work ever obtained.

New Inventions.

Improvement in Entry Lamps.

The annexed figure is a perspective view of an Automatic Entry Lamp, for which a patent was granted to Charles W. Felt, of Salem, Mass., on the 9th of January last. The object of the invention is to effect a saving in light producing material—gas, oil, or other burning fluid, used in lamps placed in entries of buildings (or situations where light is needed at short intervals,) by reducing the light to the minimum burning point when it is not needed.

Fig. 1 is a perspective view of the Lamp and fig. 2 is a back view of it, with the plate removed to show the working parts.

A is a small metal plate, cast with a socket A, to receive a Lamp containing oil or camphene. This lamp plate is secured by s crews to any wooden fastenings in the entry. The wick tube of the Lamp has a small outer tube L, which is capable of sliding up and down on it. When it is slid down, a greater portion of the wick, *m*, will be exposed to the air, consequently the Lamp will give more light; when it is raised a very small portion of the wick is exposed, consequently the light is feeble.—When a person enters the hall or entry where this Lamp is placed, the door, as it is opened, is made to slide down the outer wick tube, L, so as to give greater light then, and by closing and opening the door again, the tube, L, will be moved up to shield the wick, so as to save oil or fluid when a full light is not required. This is done as follows:—The outer wick tube is made with two small rings on it, forming a groove, K, between them; the prongs, *d'*, of a fork, D, embrace the outer wick tube, consequently, if this fork be vibrated up and down, the outer wick tube, L, will be moved up and down to effect the objects stated. The fork, D, is therefore hung on a pivot behind the slot, *d*, on plate A, as shown in fig. 2, and it has a vibrating arm hanging down behind the ratchet wheel, C,—which has angular cams, *c c*, in dotted lines on its inside; these act upon the inside hanging arm of the fork, D, as the ratchet wheel, C, is rotated, and thus a vibrating motion up and down is given to the fork, D, to slide the wick tube, L, up and down, for the purpose stated. We will now describe how the ratchet wheel, C, inside of plate A is operated.

J is a vertical slide composed of a small strip of metal sliding in grooves to guide it. It has a pin on it at one side, to which a coiled spring, H, is secured at the top; this spring is also secured to a pin near the bottom of the plate, A. The office of this spring is to draw back the slide, J, when it is forcibly drawn up. On this slide there is a tooth projection, B, which takes into the teeth of the ratchet wheel, C. There is a vertical dog composed of a piece of wire, which takes into each tooth of the ratchet wheel, C, as it is turned round, and holds it, thus guiding and governing it round in one direction. To the slide, J, there is attached a cord, I, which is also attached to a bell crank as represented, and the wire is fastened to the door of the hall or entry in which the Lamp is set. When the door is opened, the slide, J, is drawn up by the wire attached to the bell crank (it being fastened to the door); the tooth, B, of the slide, then acts upon a tooth of ratchet wheel, C, turning it partially round; an angular projection, *c*, (dotted lines,) then allows the hanging arm (which is really a spring pallet) of fork D, fig. 2, to drop into an angular notch between two projections, *c c*, on the inside face of ratchet wheel. C, and then the fork, D, fig. 1, vibrates to slide the tube, L, down, and expose a large wick to throw a full light on the entry. When the door is closed, the tooth, B, drops, and does not act upon the ratchet wheel. By opening the door a second time, the hook, B, turns another tooth of wheel C round, and a projection, *c*, on the other side of the wheel, then throws in the end of the pallet of the fork, D, which then tips up the prongs, *d'*, raising up the tube, thus exposing only a small portion of wick, *m*, and giving a feeble light. When the door is opened again, the tube, L, will be depressed, and a bright light given out, and so on, as has been described, every time the door of the entry is opened. The fork of this Lamp can also be operated—by increasing the number of working parts—to make the Lamp give a full light when the door is opened, then a weak light when it is closed. The same operations applied to a fork on the cock of a gas pipe, will so operate it as to give a bright and feeble light by opening and closing an entry or hall door, by increasing and lessening the gas orifice of the pipe. This principle of operation covers gas lights, and those obtained from burning fluids of any kind. The operating parts of this Lamp are few and simple, and they accomplish the objects specified with ease and accuracy.

More information may be obtained by letter addressed to Mr. Felt, at Salem.

FELT'S PATENT ENTRY LAMP.

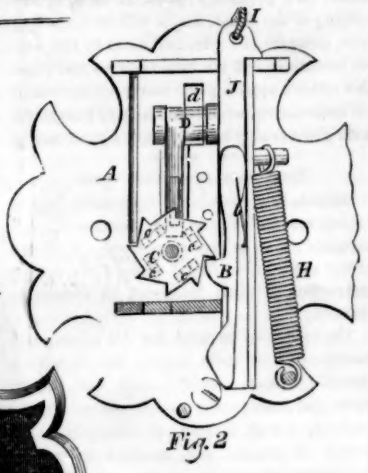


Fig. 2

Brown's Patent Sounding Instrument.

The accompanying engravings represent an instrument for sounding or ascertaining the depth of the ocean, for which a patent was granted to Capt. C. F. Brown, of Warren, Rhode Island, on the 6th of June last.

The invention relates to a new and useful instrument for sounding the ocean depths, and consists in attaching to a spindle a long spheroidal chamber, containing some gunpowder within the lower part, and having underneath the chamber a needle operated by a spring, which is forced against a percussion cap on a nipple, and thereby igniting the charge of powder when the lower end of the spindle strikes the bottom; and the time that elapses from the period the instrument is dropped until the sound is heard, or concussion felt, is noted, and the depth determined upon positive data to form proper conclusions.

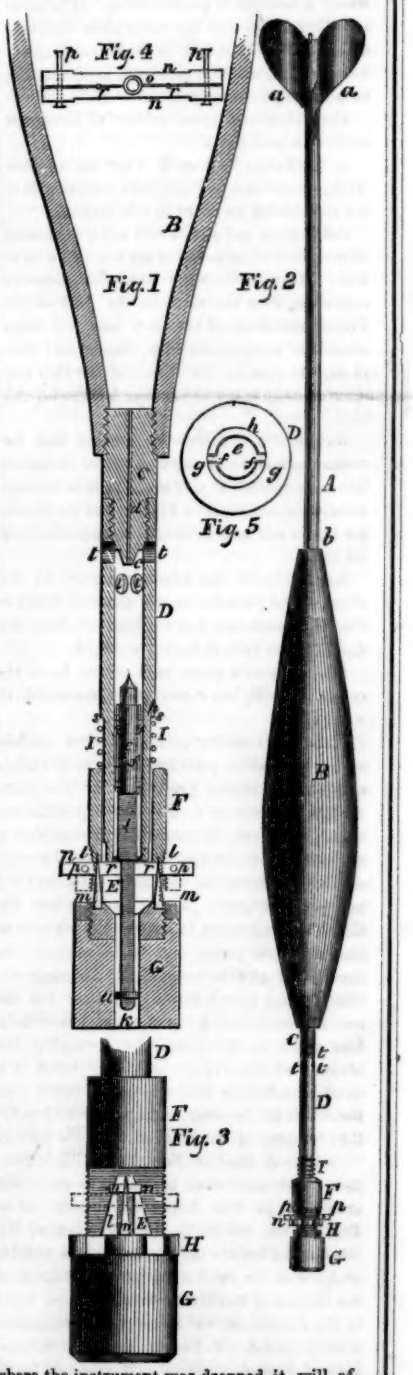
Fig. 1 is a vertical section of the lower portion of the instrument, showing its mechanism. Fig. 2 is an external view of the instrument. Fig. 3 is an enlarged outside view of the lower extremity; fig. 4 is a detached top view of the clamps, and fig. 5 is a top view of the tube which contains the needle, showing the collar and slots in which the feathers on the needle head work. Similar letters refer to like parts.

A is the spindle of the instrument; it has two spiral flanches, *a a*, at its upper end. B is a metallic chamber filled with a requisite quantity of gunpowder. The lower part of spindle A, has a screw cut on it, and it is screwed into the upper part of chamber B, at *b*, and is made water tight. In the lower end of the chamber there is screwed water tight a nipple piece, C, with a nipple, *c*, at its lower end. *d* is a small hole running through it, and communicating with the interior of the chamber. A thread is cut on the lower side of the nipple piece, and is screwed into a tube, D, which is about the same diameter as the spindle. This tube has a needle, E, within it, on the upper part of which is a head, *e*, which has two feathers, *f f*, in it, fitting in slots, *g g*, in a collar, *h*. Underneath the head, *e*, and around needle E, above the bottom, *i*, there is a spiral spring, *j*. The lower part of needle E, has a screw thread cut on it, and it extends through an aperture in the bottom of the tube, D. The lower part of the tube fits closely within a metal socket, F, on the outer lower part of which a thread is cut, and screwed into a small metal cylinder, G, having an aperture, *k*, through its center, as shown in fig. 2. H is a nut working on the lower part of the socket, F. This socket has two triangular openings, *l l*, cut through its sides; on its bottom there are two triangular vertical pins, *m m*, placed about the center of the openings, *l*—one in each. A clamp or nut formed of two horizontal plates, *n n*, is placed through the triangular openings, *l l*. The lower part of the needle, E, passes through the plates, *n n*. A half circle is cut on each plate, with a thread formed on them, and forming, when together, a circular opening, *o*, fig. 4. The plates, *n n*, have a pin, *p*, at each end passing loosely through them, allowing them to be forced apart or brought close together, and to keep them in their proper place. *r r* are small apertures (between the plates, *n n*,) in which the tops of the triangular pins fit when forcing the plates apart.

The needle, E, is depressed within the tube, D, by turning the small cylinder, G; or if the tube, D, is detached from the nipple piece, C, and then turned, the same object will be effected. The needle is prevented from turning within the tube, D, by means of the feathers, *f f*, fitting in the slots, *g g*, in collar *h*, and consequently the needle is forced downwards as its lower end passes through plates, *n n*, which form a nut. As the needle is depressed, the spring, *j*, is proportionally compressed, and when sufficiently so, the tube, D, is screwed on the nipple piece, C, and the nut, H, screwed downward from the plates, *n n* (dotted lines,) to the position shown in fig. 3. These plates are then, of course, free from the nut, and the small cylinder, G, is prevented from being moved accidentally upward, by a light spiral spring, I, resting upon the upper part of the socket, F, and against a shoulder, *s s*, on the tube. When the parts are in this position, as shown in fig. 2, the needle may be termed "cocked." It will be observed that if the small cylinder, G, at the foot, be driven upward, that the triangular pins, *m m*, will force the plates, *n n*, apart, and the needle will then spring upwards and strike against the percussion cap on nipple *c*, by the action of the spiral spring, *j*. A small nut, *u*, is placed upon the lower end of needle E, merely to prevent the separation of the cylinder, G, and the tube, when the needle is not cocked.

OPERATION—The needle is first cocked within the tube, D, as described, and the instrument is gently lowered into the ocean until the flanches, *a a*, are on a level with the water surface, when it is dropped. The spiral flanches, *a a*, will cause the instrument to rotate as it descends, to insure a vertical line of descent When the small cylinder, G, strikes the bottom, the resistance of the spiral spring, I, is overcome by the momentum, and the triangular pins, *m m*, force the plates, *n n*, apart, liberating the needle, the coiled spring, *j*, of which drives it up against the percussion cap on nipple *c*, igniting the charge in the chamber, B, and making it explode. The sound of the explosion will be heard or the concussion will be felt at the surface of the ocean, by those who have let down the instrument, and the time which elapses between letting it fall and hearing the sound of the explosion must be ascertained by a stop watch. By this means the depth of the ocean may be ascertained, for a table may be formed from a number of recorded experiments, giving the time between the dropping of the instrument, and that when the sound is heard at the surface, according to ascertained depths. A percussion cap can be used on the nipple, or a pill of an alloy of potassium. Water is required to ignite the latter, and for this purpose small apertures, *t*, are left at the upper part of the tube, to be opened when the instrument strikes the bottom.

This instrument is a simple means for sounding the depth of old ocean, and also for ascertaining the strength and direction of a current, for if it appears that the ocean is agitated at a spot on the surface distant from



where the instrument was dropped, it will afford evidence of a current, and its velocity—according to that distance. Capt. Brown is one of our most active, practical, and original inventors, and the range of his investigations and improvements is exceedingly comprehensive. More information may be obtained by letter addressed to him, at Warren, R. I.

Scientific American.

NEW-YORK, OCTOBER 27, 1855.

Progress of Useful Science.

We have just received an address recently delivered before the Faculty and students of La Grange College, Ala., by the Professor of Physical Sciences—Rev. Wm. G. Williams—on the subject of "the physical sciences; their importance and relation to each other." In it we find many beautiful thoughts happily expressed; and we agree with its central doctrine, viz., "man, as a philosopher, is an interpreter and not a dictator in the realm of nature." Respecting this doctrine it says, "ignorance of this great truth, on the part of the ancients, is the grand reason of their almost utter failure in the cultivation of the natural sciences." We do not dispute the correctness of this statement respecting the cultivation of the "natural sciences" by the ancients, but it suggests the query "how can we account for the low state of practical mechanics among them?" for it cannot be said that man is merely an interpreter, and not also a dictator in the invention of machinery. We do not find a single animal on *terra firma* that moves itself on wheels like a locomotive; nor a single fish in the sea that propels itself with wheels, like a steamship. This shows that man is a dictator in mechanics, which is a branch of physical science. We have no doubt that had the Greeks, with their powerful imagination, devoted themselves to the really useful branches of mechanics, they would have invented many notable machines which were left for modern inventors to plan and construct. But in the dark days of old, the learned Greeks scorned those that labored at the useful mechanic arts, and looked upon them as mere appendages of a State, not the source of its wealth and power. This is the reason why we find the names of so many poets, painters, sculptors, orators, and warriors inscribed on the pages of ancient story, but none of great mechanics, like Watt, Fulton, Arkwright, and Whitney, of modern times. The ancient mechanics had no hopes to inspire them, and consequently no heart to plan and construct. Grecian song and ornamental art have never been surpassed; but in practical mechanics—useful machinery—the Greeks were little better than some tribes of savages.

We are grateful that we live in better times—times when the wisest statesmen and greatest philosophers appreciate and acknowledge the worth of inventors and mechanics. This feeling, however, has been of slow and gradual growth, for we find that such a man as Pope—one hundred years ago only—called Newton "a mere maker of spectacles," because he was fond of mathematics and machinery. It is evident that in proportion as a correct appreciation of inventors and mechanics has grown up among the nations, *all* the sciences have advanced. Intelligent men know and feel this to be true. Kings are now nursing fathers, and Queens nursing mothers of the useful arts. The great London Exhibition of 1851, and the great French Exhibition of 1855 are examples of this. Ancient history tells us of no such glorious pageants. The inventors and mechanics are no more held to be mere appendages of a State; they are felt to be the main stay of its wealth and greatness. At the meeting of the British Association for the Advancement of Science, held in Glasgow last month, the subject of the English patent laws was discussed, and the hearts of all the *savans* present seemed to gush out in gratitude to inventors. Sir David Brewster stated that even "a new machine which failed of success effected some good, inasmuch as it showed that some one felt a want."

In our own country, the moment the first tree was felled in the forest, the value of labor-saving machines began to be appreciated, and from that time to the present there has been a mighty outgrowth of American inventions. At the meeting of the above-named scientific association, Fairbairn, the celebrated engineer, gave an account of the useful machines at the Exhibition in Paris, from which he had just arrived, and paid a marked compliment to the many new and useful inventions which he found there by American contributors. Our inventors and mechanics always have been (and are now more than ever) felt to be a great power in the State. No one can visit the New York Crystal Palace, at the present time, without coming to this conclusion. It has given us pleasure to witness the movements of the many new machines of real substantial merit there displayed. These afford evidence that man is both an interpreter and a dictator in the useful arts. He bids iron fingers weave and knit, and they do it. He commands a rough piece of timber to advance to the revolving blade of peculiar construction and then come forth from it carved into many bounding lines of beauty, and it does so. He dictates to iron fingers how to sew his coat, and his boots, and they obey his bidding; in short, a hundred machines on exhibition prove to us that man's progress in the mastership of the physical sciences, so far as they relate to the useful arts, is in accordance with the measure of public appreciation and encouragement that his efforts receive.

Reminiscences of the Paris Industrial Exhibition. No. 3.

Turbine Water Wheels.—The opinion that "no more than fifty per cent. of the water power could be obtained from a wheel discharging its water in a contrary direction to the wheel's motion" was at one time current among hydraulic engineers. This notion operated prejudically to improvements on the re-action water wheel; hence, for a great number of years after the breast and overshot wheels had become very perfect, the re-action wheel only existed in the form of the "Barker Mill," viz., a central tube, and two horizontal hollow arms on a vertical shaft, from the extremities of which the water was discharged, and gave motion to the shaft by recoil. We believe that the world is much indebted to French hydraulic engineers for directing attention to old errors, and pointing out the advantages to be obtained from improved re-action wheels, to which they gave the name of *turbines*, because of the peculiar construction of their buckets, and the spiral form of the water shutes. It is generally believed in America, however, (and from what we know of the subject, we think the belief is founded on correct data,) that improved turbine water wheels were in use in the United States before they were employed in Europe; but be that as it may, the French hydraulic engineers deserve much praise for what they have done in improving them. We therefore expected to find quite a number of turbines on exhibition, but in this we were disappointed, for we only saw a double one, and all the novel features embraced in it were simply a vulcanized india rubber shute, and draft boxes, stiffened with wooden plates. These were perfectly water and air tight—desirable qualities, no doubt, but wooden flumes and draft boxes are much cheaper in America, and may be made to answer every purpose. Seventy-five per cent., we were given to understand, was the amount of power derived from the best constructed French turbines; this falls short of the results obtained by the turbines at Lowell, still it is equal to those obtained from the common breast and overshot wheels. We hope the reports of the performances of this class of wheels are correct, because they are much less expensive to construct than other kinds.

New Surveying Instrument.—An apparatus for delineating sections of surveys for railroads, canals, &c., and for computing the solid contents of cuttings and fillings, was exhibited by M. Collin & Wagner. It consisted of a standard three feet high, supported on a carriage having three wheels. From this standard there was suspended a pendulum, the rod of which extended beyond the suspension point and there actuated a series of levers as it vibrated. When it was desired to delineate a section of a railroad survey, it was drawn on the ground, on the proper line, and, of course, the undulations gave a proportionate amount of vibration to the pendulum, which again actuated the series of peculiarly combined levers mentioned. One of them operated a pencil, and traced the undulating line of the road on a piece of prepared paper, which was wound off a cylinder. The other two moved counters constructed on the principle of a calculating machine, which showed the actual amount of solid contents to be excavated, from elevations, and the fillings-up to be made in depressions of the road to a specific level. This machine was of light form, easily carried, and for excellent workmanship surpassed by none on exhibition.

Demonstrating the Laws of Gravitation.—Galileo, the father of modern mechanical philosophy, was the first person who really discovered the true action of gravitation in the accelerated velocity of falling bodies, although the discovery of the *cause* was left to the genius of Newton. The philosophy of Aristotle, which long swayed the minds of men regarding the velocity of falling bodies, was wrong in essence and principle, inasmuch as it assumed that of two like bodies, the one weighing twice as much as the other, if dropped from an elevation, the heaviest would fall with twice the velocity of the smaller body. Galileo demonstrated the true law of falling bodies, by the inclined plane, and he also showed that the path of a heavy body projected obliquely was a parabola. A beautiful apparatus in the Exhibition, by M. Morin, demonstrated the path, the time, and velocity of falling bodies with perfect accuracy. It consisted of a cylinder covered with ruled lines of *ordinates* and *abscissa*. A style or tracer having a relative motion with a falling body, traced upon the ruled paper on the cylinder, a curve, by which it was verified, that the abscissa representing the speed is proportional to the times, and the ordinates proportional to the square of the times, and that the curve is parabolic.

Ingenious Gold Coin Scales.—M. Deluil, of Paris, a distinguished mathematical instrument maker, exhibited a number of very ingenious apparatuses; and among the number, a pair of curious scales for weighing gold coins, particularly attracted our notice. It was operated by clock-work, and weighed ten coins at once. The number of pieces were placed on a receiver, and made to pass through different sloping grooves or channels into the basin of a pair of scales. Every single coin as it reached the scale was weighed, and according to the *length* of the oscillations of the beam, the weight of each was determined. But the most curious part of the operations of this scale consisted in a separator trap being opened by the oscillation of the beam for each coin, according to its weight, and the coin thereby deposited in a drawer below. This coin detector recorded the most minute difference of weight in each, and separated them from one another according to the gravity, in the manner described. All the weigher had to do in weighing a quantity, was simply to place ten at a time on a receiving plate. We witnessed one thousand gold coins weighed in nineteen minutes, and the weight of each was determined with the utmost accuracy.

Constant Supply Electric Battery.—We noticed an electric battery which, from the method adopted to renew itself with fresh exciting liquid, we conceived might be useful to many of our electrotypists. It was similar to our common ones, in which is used a solution of the sulphate of copper, but in order to avoid the frequent renewal of the solution, a spherical bottle, filled with dissolved sulphate of copper, was placed in the battery with its neck dipping under the liquid in the cup, thus forming an elevated supply fountain. As the liquid lowers in the cup, by the decomposition of the zinc, it flows out of the glass, and thus the battery may be fed at once with liquid to last a month.

Mining Implements.—France has very few coal mines, but on this very account they have received the fostering care of the Government, and next to those of England, have the best mining implements in the world. Some of the mines are very deep, and in this respect they greatly differ from those of the United States, hence they require to be worked in a different manner. The mines, generally, are more than 600 feet deep—holes bored into the earth so deep, that they would receive two Trinity Church steeples placed one above the other, without leaving a single inch projecting above the surface.—Away down in these subterranean regions the toil-worn miners drudge out a weary life. Some of the mines have stairs for the miners to ascend and descend, but the toil of ascension is so severe—that the more common plan is to raise and lower them in metal buckets, operated by the power of a steam engine. Each pit is divided into two open sections or mouths, by a central partition, and by a *double tow*—a large flat hempen belt—running over pulleys above the pit, the buckets are elevated and lowered. While one bucket is ascending on one side filled with miners or coal, an empty bucket is descending on the other side. Many accidents, in spite of great care, have occurred by belts breaking, and dashing the ascending and descending miners to pieces down the terrible declivity. In order to avoid such accidents, a new and ingenious apparatus was exhibited by V. De Brunelle. It consisted of two upright iron shafts, the one alongside of the other, secured in the pit or mine, and extending from the top to the bottom. About every three feet apart there was a little balcony on each shaft from top to bottom, and when a miner stepped on one balcony to ascend, on the one side, it was elevated by an intermitting motion, and then a balcony on the other shaft descended the same distance, and thus a perfect rotation of ascent and descent was performed by these balconies on the two shafts. Buckets of coal were placed on these balconies, and elevated in the same manner as the miners, thus forming a complete and entirely different plan from working the pit with endless belts running over pulleys. The plan struck us in a very favorable light as being much the safest, although the most expensive. Some of our American mines will yet be as deep as those in Europe. When this takes place, we hope our mine owners will not forget to adopt this humane invention.

GREAT FAIR OF THE AMERICAN INSTITUTE
Second Week.

In continuing our notes of the Exhibition we would remark, that since our last publication many new and important additions have been made to the stock of contributions, and that the appearance of the Fair throughout has been much improved. The attendance of visitors has also become very large, and is constantly increasing. At first, only a few persons, comparatively, ventured within the doors. But they were so highly pleased, and so agreeably surprised, that, we suppose, they went home and are now returning with all their families and neighbors. The exhibition opens every day at 9 A. M., and closes at 10 P. M.—The evening attendance of ladies and gentlemen is very great.

It is to be regretted that the Managers did not avail themselves more liberally of the facilities afforded by the public press in announcing the prospectus of the Exhibition. There are thousands of people resident in the rural districts, who will only begin to hear of the excellence of the display when the Fair has closed: and who, had they known of it in time, would have been glad both to attend and contribute. It is by far the most interesting Industrial Exposition ever conducted by the American Institute.

The Mechanical Department.—[Continued]

Several new contributions have been added since last week, and others, it is said, are yet to arrive. In our opinion the mechanical division of the Fair is already superior, in point of real novelty, to the Exhibition of All Nations, as originally held at the Crystal Palace. This is saying a great deal but we think that examination will sustain our conclusions. Judging from the large number of recently patented machines that are there collected, the present season has been exceedingly prolific in its crop of new inventions; indeed, the country has been as much blessed, proportionately, in its inventive harvest as in its cereal products.—The largest proportion of all the operating machines on show are patents of 1855.

So far as our observation goes the general value of patents, regarded in a monetary point of view, is steadily on the rise. If we look back for only a few years, we find that inventors often had difficulty to inspire confidence among capitalists, as to the worth of their inventions. It was not uncommon for a lapse of two, three, and even more years to occur after a patent was granted before the necessary funds could be raised for its public developement and introduction. The times have greatly changed in this respect. Plenty of money is now usually at hand for investment in new inventions, provided they are really good, and the working

of patents is commenced with but very little delay after their issue. The Exhibition at the Palace is abundantly demonstrative of this fact.

Weighing Machines.

The most striking novelties in this branch of invention are the contributions of the Vergennes Scale Co., Vergennes, Vt., who exhibit two forms of Elnathan Sampson's improvement, patented last year. One of these weighing machines is in the form of a railroad track, and occupies a space one hundred and nineteen feet in length. So accurately is it balanced, and so excellent are the principles of its operation, that if an individual steps upon one of its extreme ends, his weight will be at once correctly indicated. We witnessed some experiments of this character, with much satisfaction. The price of this scale, ready set up for use, is $2,500; capacity, 100 tuns. This form of weigher is capable of indefinite extension, so that if it were desirable, a machine half a mile or more in length, which would weigh with perfect certainty and accuracy, might be constructed. No pit is required below the apparatus, as the truss levers used in the ordinary machines are dispensed with. This is a great advantage.

A large platform scale, capacity 6 tuns, built on the same principles, is also shown. Its floor only rises a few inches above the spot where it rests, and as stated above, no pit is required. Price $175 ready set up. Hay scales so light as to be quite portable, yet perfectly accurate, are made in large numbers by the Company. This invention is now exhibited here for the first time. It was illustrated in the last volume of the Scientific American; English and French Patents have been taken out through the Scientific American Patent Agency.

Mr. John Kelly, of Sag Harbor, L. I., exhibits a very ingenious weighing apparatus for use in shops, drug stores, &c. The weight is moved by turning a thumb screw, and there is a dial with pointer which exhibits the result in pounds and minute fractions, with the most perfect accuracy. By the turn of another screw the required allowance for tare is shown. The whole forms one of the most convenient and complete weighers with which we are acquainted. This is its first exhibition. Patent applied for. John Sherry, the famous clock maker at Sag Harbor, L. I., is the assignee of this invention.

Bramble's Grain Scales are self-acting and self-registering in their operations. A trough-shaped box, divided into two compartments by a partition running lengthwise, receives the grain from a reservoir placed above. The box rests on a weighing apparatus; the grain falls in a steady stream. When a sufficient quantity to balance the scales has fallen into the box, the latter cants over a little and shuts the spout, thus stopping off the grain; at the same moment a valve in the bottom of the box opens, and the grain therein slips out, weighed and measured, into a bag; the box then tips back again, opens the spout, and receives a new load. The mechanism is quite simple, and operated wholly by the weight of the grain. A dial exhibits to the eye, and keeps an account of the quantity of grain that passes through. No human attendance is needed. Exhibited here for the first time by Wm. A. Bramble & Co., No. 68 Third street, Cincinnati, Ohio.

Messrs. Fairbanks & Co., No. 189 Broadway display several specimens of their well known and much esteemed weighing machines. Our readers are so familiar with them that no description will be required.

Messrs. Durkee, Hough, & Co., 13 Whitehall street, N. Y., also exhibit a collection of weighers, made by the Duryee & Forsyth Manufacturing Co., Rochester. Their scales are well made, but are not new inventions.

The Lazy Man's Bedstead.

Strolling along through the galleries, our attention was arrested by shouts of laughter proceeding from a group of ladies and gentlemen gathered around some apparently rich subject of merriment. Drawing near, we found the object to consist of a handsomely finished bedstead, having a soft mattrass on which lay an urchin imitating sleep. Attached to the head of the bedstead was a small alarm clock, which, the polite attendant informed the company, was connected with the bed, the whole being so combined that at a given moment the alarm bell would ring, and soon after, if the sleeper did not arise, he would, without further delay, be mechanically tumbled out of bed.—The alarm was accordingly set, the clock ticked for a few minutes, the bell rang, and then, true to its function, quick as a flash, the mattrass tripped on its side, and down came the urchin rolling and sprawling on the floor, a laughing stock for all the spectators.

The above invention was patented by Mr. J. Carroll House, of Lowville, Lewis county, N. Y., July 17th, 1855. This is its first exhibition. It was illustrated by an amusing picture in the Scientific American a few weeks since.

Lathes for Wood Work.

There are four different kinds of self-acting turning lathes in the exhibition, as follows: Albin Warth's, patented in 1854; F. Brown's patented 1855; A. D. Crane's, patented 1854, and S. Carpenter's, patented 1855.

Warth's Lathe is a wonderful machine, and attracts large crowds of spectators whenever it is put in operation. The rapidity with which it transforms the rough sticks of wood into ornamental bed posts, table legs, banisters, also wheel hubs, tool handles, spools, and the like, is really marvellous. The stuff to be turned is swung in bearings and revolves in the usual manner.

There are two sliding rests, one on each side of the stuff, which carry the cutting tools. The rests move slowly along the whole length of the machine, and during their progress are made to play in and out laterally, and so cause the cutters to act on the wood; this lateral play of the rests is produced by means of guide plates located on the sides of the machine. The guide plates are of the same length as the stuff to be turned. The pattern produced in the wood is governed wholly by the formation of the guide plates; the latter are so fixed as to be conveniently removed and others substituted; this is the only change required in the machine, to adapt it to the production of different patterns of turning. In its working, all that the attendant does is simply to swing the sticks and turn on the power. We have seen some elegant specimens of fancy turning by this machine. A lad, we are told, can easily attend to two of the lathes, and in one day do the labor of fifteen men working with fifteen hand lathes. Mr. Richard E. Dibble, No. 360 Broadway, N. Y., is the general agent for the machines, the price of which is $200 and upwards, according to size. This invention was illustrated in the last volume of the Scientific American. Patents for the United States, Great Britain, France &c., were taken out through the Scientific American Patent Agency. This is the first public exhibition of the machine.

Crane's Lathe is a small and apparently simple affair. The only complication is in the cutter head; this revolves with great speed, and carries a number of hoop-shaped knives, which are made to move in and out, at the required intervals, by means of a series of plugs, which enter the center of the cutter head. We should need an engraving in order to convey a clear idea of the parts, The form of the turning is governed by the shape of the plugs; the latter are changed whenever a new design is to be produced. This invention successfully accomplishes the turning of irregular forms without the use of a pattern. It works well, and is, in our view, a good invention. Price of the lathes $300. Exhibited for the first time here, by Crane & Tompkins, 74 Wall st., N. Y.

Brown's Lathe is intended for turning spools, tool handles, &c. The chisels are moved in and out by means of rotating cams. The form of the cams governs the shape of the design produced in the wood. There is an auger that bores the spools and handles as fast as finished. The operator was only occasionally present, and we did not see the machine in motion; therefore we cannot judge of its performances. Now first exhibited by J. D. A. Mensing & Co.

Carpenter's Lathe.—This is a self-acting machine for producing tool handles, hubs, &c., invented by Samuel Carpenter, of Flushing, L. I. We are preparing engravings illustrative of its construction, and shall therefore defer our description until they are ready.

Machine for Splitting Kindling Wood.

In large cities like New York almost the only kind of fuel used for heating and mechanical purposes is hard or anthracite coal. This substance burns very well after it is lighted, but for the start it requires a pretty hot blaze, Bits of pine wood are found to answer the purpose very well, especially in the stoves of dwelling houses; consequently there is quite a large demand for kindling wood.

The N. Y. Kindling Wood Company, J. A. Conover & Co., agents, 130 Horatio st., N. Y., exhibit, for the first time, one of their large steam machines for sawing-up and splitting kindling-wood—the patent of J. A. Conover, May 10, 1855.

At the rear of the machine there is a circular saw which divides the sticks into suitable lengths, while at the front part there is a large splitting axe, having four blades arranged at angles. These are attached to a vertical shaft, and move slowly up and down. Between the saw and the splitters there is a strong endless belt which receives the blocks of wood ends up, conveys them along towards the front till they come beneath the splitters. The stuff is here divided into kindling wood with great rapidity, and falls down in a pile at the base of the machine. The apparatus is a great attraction in the Fair. The splitters have a very stately sort of movement, and when they enter the wood seem like spades acting on the soil, handled by some monstrous giant. We are informed that a man is enabled to cut up and split fifteen cords of wood per day with one of these machines. The Kindling Wood Co. employ quite a number of horses and carts to peddle their products around the city.

Improved Plane Iron.

In this improvement the cutting iron is placed inside of a thin metallic case, open at both ends. This case, with its cutter, is wedged into the plane in the common manner. The cutter is moved up and down within the case by means of a set screw. The thickness of the shaving is adjusted with the utmost facility; all that is required being simply to turn the screw. The improvement is cheap, simple, and applicable to the planes in common use. It is an excellent invention. The carpenters and wood-workers are delighted with it. Now exhibited for the first time. Patented Sept. 18, 1855, by Horace Harris, Reed's Corners, Ontario Co., N. Y.

Match-Making Machines.

The only one shown in the Fair is that of L. & J. Thomas, patented Jan. 23rd, 1855, exhibited by Southwick, Thomas, & Co., Brooklyn. While witnessing its performance we asked the gentleman in attendance, who said he was the inventor, if he would be good enough to let us see the construction. He replied in a burly sort of a manner, that 'twasn't likely we should understand it if we looked three months. We happened to be perfectly well acquainted with its principles, but to oblige the gentleman, we will yield to his wishes, and keep that matter dark. This is the first appearance of the machine; it works rapidly, and draws a crowd, but it appears to contain little originality. Its chief features are apparently contained in Elkan Adler's patent, granted in 1854, which was illustrated and described in the last volume of the Scientific American.

Life Boats.

Three varieties only are on exhibition, viz., Francis', an old and familiar improvement; Tewksbury's, patented some time since; Stevenson's, a new invention, just out.

Francis' Life Boat is composed wholly of sheet metal, with air-tight chambers in the bow and stern. Its excellent qualities are everywhere known and appreciated.

Tewksbury's Life Boat is of peculiar construction. Cut off the bottom of an indian's canoe and launch the remaining sides into the water—thus having a boat with sides, but without a bottom,—and we have the outline of G. R. Tewksbury's invention. The necessary buoyancy is obtained by making the sides double, and, of course, air tight. This renders the boat so light, that planks placed midway down between the sides will still be above the surface of the water. These planks serve as the bottom of the boat; the seats are arranged in the usual manner. Capsize the boat, and we find another row of seats, all ready, the same mid-way planks serving as the bottom. It matters not how this boat is plunged into the water, for it cannot come wrong side up, both sides being alike furnished with seats. Neither can it ever become swamped, for the bottom is always above the surface of the sea, and any water that dashes over will run away down through the cracks left in the planks for that purpose. We are informed that a boat of this description, 18 feet long and 6 feet wide, will accommodate 35 persons, and sustain 60 or 70 others hanging upon the outside. It strikes us as being a most valuable improvement. A large tank of water is provided at the Palace, and practical experiments, at which large numbers of visitors attend, are daily made with one of the boats. Exhibited by the "U. S. Life Boat Co.," J. W. Ayres, Agent, No. 38 Broadway, N. Y. Engravings illustrative of this invention have been published in the Scientific American. Patented in the United States and Great Britain through the Scientific American Patent Agency.

Stevenson's Life Boat is a novel affair, so made as to be folded up and occupy but very little space. The sides are composed of strong canvas painted and doubled, with a filling of broken cork between; a great buoyant power is thus obtained. The bow parts are flexible, and bend around into graceful lines. Within is a lining of rubber cloth, and above this a light wooden frame-work, which supports the seats. The latter serve as braces to keep the boat open. A board hinged to one of the sides answers for the bottom. The boat, when spread open for use, is very strong and substantial.

Unlike some others, its buoyancy is not dependent upon rubber air chambers, which the least puncture destroys. The seats, oars, and everything required for navigation, are placed within the folds. A few days since, in company with a large crowd of spectators, we witnessed some experiments in the packing and unfolding of this invention, at the Palace. The sides opened and shut like a huge pocket-book. The rapidity with which the boat was spread for use, its strength when thus prepared, and the facility with which it was again folded together, seemed to surprise all lookers-on. Each operation required two minutes and a half. We regard it as a very valuable invention. We learn that Capt. Loper, and other gentlemen experienced in nautical matters, entertain high opinions concerning the practical excellence of the improvement. Now exhibited for the first time. Patented, 1855, by J. Stevenson, Philadelphia, Pa.

An engraving of this invention is now being prepared for our columns.

Gas Engine.

Up to the time this sheet went to press, Dr. Drake, the inventor, had not succeeded in getting his machine in operation. We have nothing, therefore, to say respecting its performances. The engine, we are informed, is quite new, and the various parts require nice adjustment. One or two men have been at work upon its fixings for about two weeks past. We hope to give some account of its movements next week.

The Cloud Engine.

We are requested by the inventor, Mr. Wm. Mt. Storms, to say that he was in error in giving us to understand that he claimed a gain, with his Cloud Engine, of seventy-three per cent. over simple steam. He now wishes it distinctly understood that he claims a gain of thirty-three and one-third per cent. only.

The Cloud engine continues its movements with unabated vigor at the Palace, and is the center of attraction among engineers and scientific men. It is a great novelty. As yet no tests of its power have been made.

During the present week experiments are to be made with the Dynamometer. We shall duly publish the results.

Steam Power at the Palace.

We have never seen, in any public exhibition, such wretched arrangements for providing steam power as the committee of the Institute have this year realized. They have but one large boiler, and the draft, or something, is so deficient that only a low pressure is, at best, maintained; there are frequent intervals when the steam falls so low that all the engines and other machines come to a dead stop; at other times the main shaft goes by fits and starts, and has an irregularity that is dangerous to delicately constructed mechanism. The exhibitors of machinery certainly labor under great disadvantages.

TO CORRESPONDENTS.

J. T. M., of N. Y.—Soda will precipitate the lime in the water used for your boiler, but we cannot tell the quantity required, as that depends on the amount of lime held in solution. You can easily make a few experiments yourself with dissolved soda, poured into a certain quantity of the water, and thus find out the amount of soda required. A strong soda solution will act injuriously on the iron of your steam boiler, but a small quantity will not sensibly affect it. It will just be as easy, and more safe, to purify the water before it enters the boiler than in it.

J. A., of Mich.—Concrete roofs were exhibited in the French Exhibition, which become very soon as hard as stone. We do not think you stand any chance whatever of getting a patent for your combination of substances for roofing. A good deal has been done in this line; still, it is a subject of much importance, and will grow in importance as timber becomes scarce and expensive.

A. W. H., of Mo.—We have no practical experience in the marble sawing business, and cannot therefore answer your inquiries. It would be more satisfactory for you to address your inquiries to some marble worker. Inventors should study all the conditions necessary to the perfect operation of their machines. Without such preliminary knowledge, they will many times fail in getting a machine perfectly adapted to the work.

B. B., of Ct.—Indicators for registering the distance run by carriages are well-known devices. They have been successfully employed. Your plan does not possess much novelty, but we are of the opinion that a limited claim can be sustained. We should think every livery stable keeper would use a device of this kind, so as to save themselves from imposition.

C. F. Aehle, of Boonville, Mo.—Wishes to procure a saw mill to cut hard timber. He wants the best machine in existence, and there is no doubt several of our readers can supply his wants with credit to themselves and decided advantage to Mr. Aehle.

H. C. C., of Iowa—We do not know how you can get the Tinner's Guide unless from the publisher—write him again.

C. R., of Ohio—Please send us a sketch and description of your alleged improvement on Ketchum's Mower, and we will examine it.

C. D. M., of N. Y.—The idea of extending a pipe over the top of the locomotive for the purpose of taking in fresh air to supply the train of cars, is quite old. See Vol. 2 of the Sci. Am.: it has often been proposed since that time. The plan is not ridiculous, but presents seemingly a sound basis. It has been abandoned, however.

C. W., of C. W.—We are friends to human progress, as you imagine, but we cannot go so far as to procure for you the price, and an explanation of all the different kinds of buckwheat hulling machines. We should advise you to write to some agricultural warehouse in Buffalo as the most likely place to get the information.

C. S. J. of Mass.—It would be a very long road without a turn. If you are disappointed you should not be discouraged. Inventors are often anticipated, but they should not become supine. You will succeed by perseverance, and in no other way.

N. S. H., of Pa.—The plant you have sent us is known here by the name of "milk weed." The fibers of the pod are beautiful and silky, but they are short and weak, and therefore not suitable for textile manufactures.

C. W. McC., of N. J.—We know it is a common belief that a ball fired from a smooth bore fire arm will pass through a common piece of window glass, and cut a clean round hole. We have never tried the experiment: if yours have been conducted with a smooth bore, they certainly contradict a common opinion, and one, too, which has been taught in school and college. It is easy to conceive how the spiral flight of a rifle ball must shatter thick glass in passing through it.

J. Van, of Ill.—Instead of air at a low heat being any advantage in using it as a motive agent, it is the very reverse, both with steam and air. You are in error in stating that we have ridiculed hot air as a motive agent; we only commented on the assertions of those who advocated its use and denounced steam. Yours may be a superior hot air engine, but it never will supersede the steam engine on land or water.

C. Jordan, of Sequin, Tex.—Wishes to procure tools for boring artesian wells, the latest and best. Can some of our subscribers inform him?

D. W. Blackleach, of Sacramento, Cala.—Is about to engage in the manufacture of buckets, tubs, etc., and desires to get the best machinery for that purpose. He wishes to know the cost and amount of power required to drive the machinery, and any other information that may be useful to him in the business. Communications sent to us upon the subject will be addressed to him.

A. C., of Ohio.—Your ideas in regard to the action of the Secretary of the Interior in seizing upon portions of the Patent Office, are very spirited; but it would be better for you to direct your zealous labors in another direction, where they will do more good. Inventors in your section, and all others who are friendly to this noble institution, should contrive to reach the member of Congress in the district, and secure his influence in saving the remaining portions of the building from the hands of the modern Philistines, who threaten its usurpation. Members of Congress enjoy the franking privilege, and we advise every inventor in the country to make use of it by presenting his views in writing to the M. C. in his district. We will do all we can to save it—let inventors second our efforts.

E. R., of Ky.—It is impossible for us to comprehend the operation of your invention without a sketch and proper description of it. Inventors should always be particular to describe briefly and pointedly all such portions of their improvements as they wish to claim. We have no patience with long, tedious, and unnecessary details in describing an invention. If the sketch is carefully done, the operation of the machine can easily be described, without waste of time, paper, and ink.

P. S., of Va.—The opening in one vessel of water running into a second one, having its bottom about one-eighth below it, should be over one-eighth larger, to fill the second vessel. The quantity of water in one vessel has nothing to do with the pressure on the square inch—that depends entirely on the hight of the column. It will require an opening of 742 square inches in the bottom of a box, to discharge 1320 cubic feet per minute, if the hight of the box is 16 feet.

G. W. M., of Pa.—In order to understand how to make malleable iron, you should procure a work upon the subject. Overman's work on iron manufacture will suit your purposes: it can be had of Lindsay & Blackiston of Philadelphia.

R. A., of Pa.—Pyroxylic acid is obtained from the distillation of wood. It mixes freely with water, and like alcohol dissolves the resins and volatile oil, and is often a cheap substitute for spirits of wine for that purpose.

F. N. B., of Wis.—In constructing a model for the Patent Office, it is not always necessary that it should operate, although it is much better that it should do so. We should advise you to exhibit an actual operating model, then there will be no excuse for mistaking your ideas.

J. A. B., of R. I.—We do not attend to the purchase of books. If you want a work treating upon the science of mechanics, Nicholson's will answer your purpose: it is dry, deep, and learned, but reliable. If you want a work on machinery, there are several.

S. B., of N. Y.—It appears that your application was filed Jan. 12, 1855, and the opposing one on the 20th June following. It seems very strange that the Office should have granted a patent for the last application, and overlooked yours so long; but no doubt Mr. K.'s patent was issued through mistake. His patent can have no force against yours unless he can go behind the date of your invention. His withdrawal from the interference is evidence of the intention to retire from the ring. Of course we cannot judge between the claims of either, but if you had employed a faithful agent he would not have allowed your case to remain silent in the Office so many months without kicking up a rumpus about it.

W. J. L., of Mass.—You could undoubtedly take the sun's altitude with your instrument, but we do not think the prospects of success with such an invention are sufficient to encourage you to make an application for a patent, we advise you to show it to some mathematical instrument maker, in Boston, and get his opinion upon it.

A. F. G., of Ill.—Devices for releasing unruly horses from carriages are well known. If you have any thing new in this line a patent can be secured for it. We advise you to send us a sketch and description of it.

S. M. C., of Mass.—We do not decline your business. We gave you our opinion merely, and if the test satisfies your expectation, we are very glad,—that is the way to prove an invention; it is better than opinions.

J. D., of Ala.—In answer to yours of the 10th, we would remark that it has been the practice of the Patent Office for some years to refuse patents on medical compositions. The reason assigned is that it would interfere with the freedom of the faculty in their practice.

R. D. N., of N. H.—We have examined the sketch of your apparatus for starting pumps when the water gets low, and we do not think you can obtain a patent for it. A suspended reservoir has been employed in a way substantially similar; that is to say, at one end of a lever the other end of which is weighted.

J. C., of N. Y.—We will return the model of your marble saw. Your determination not to proceed is a wise one, in consideration of the date of your invention. The hand power described by you does not possess any novelty, in our opinion, upon which a patent can be secured. The same ideas have been presented to us before.

G. S., of Pa.—You wish an exact rule to give the exact length of ten straight pieces that will form a circle for a wheel twenty feet in diameter. We have never seen such a rule; it would be like squaring the circle.

W. R. McD., of N. Y.—We direct your attention to the article on preserving fruits on another column.

T. S. I., of Ohio—Your machine for sawing wood does not, in our opinion, embrace any novelty. The one illustrated in No. 2, Vol. 10, Sci. Am., possesses all the features of yours. The difference is mechanical, without involving anything patentable; its portability is a recommendation, but it is not the subject of a patent. Your odometer appears to be a convenient apparatus. A dynamometer, we think, can be had of C. W. Copeland. See his advertisement.

A. A., of Ohio—You can procure of T. S Ingersol, North Ridgeville, Ohio, an odometer which will indicate the number of miles run by a carriage. He has had one in use for some time, as he informs us, with success.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Oct. 20, 1855:—

J. L. H., of Ill., $30; R. O., of Canada, $30; J. A. C., of Ala., $30; S. B. D., of N. Y., $100; C. & T., of Wis., $25; P. L. S., of Ind., $30; S. N., of N. Y., $30; J. H., of Ill., $20; J. W. K., of N. H., $15; E. A. C., of Ct., $25; G. P. G., of N. Y., $30; B. J. B., of N. H., $30; I. S. P., of Vt., $25; W. A. M., of Mass., $30; A. H., of Va., $25; G. W. P., of N. Y., $25; E. S. S., of L. I., $30; D. S. H., of R. I., $30; F. J. O., of Mass., $55; T. & S. H., of N. Y., $25; J. T., of Pa., $25; R. W., of Mass., $60; J. L. B., of O., $10; H. N. DeG., of N. Y., $55; A. J. P., of Mass., $60; R. H. H., of Ill., $30; J. P. H., of Va., $55; O. V. D. R., of Ill., $25; M. N G., of Ct., $25; C. A., of N. H., $5; D. P. F., of Mass., $52; T. B. S., of N. J., $30; J. D. A., of O., $30; P. K., of N. Y., $30; E. B., of Ct., $35; G. R. J., of N. Y., $25; H. L., of N Y., $25; T. B., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 20:—

P. L. S., of Ind.; C. A. S., of Mass.; J. C., of Mo.; B B., of R. I.; C. & T., of Wis.; S. B. D., of N. Y.; G. W. P., of N. Y.; T. & S. H., of N. Y.; J. M. T., of Pa.; G. R. J., of N. Y.; E. A. C., of Ct.; I. S. P., of Vt.; G. A. C., of Pa.; A. H., of Va.; H. N. DeG., of N. Y.; M. N. G., of Ct.; C. A., of N. H.; C. D. F., of N. J.; H. L., of N. Y.; T. B., of N. Y.; G. S., of N. Y.; E. B., of Ct.; O. V. D. R., of Ill.

Important Items.

Back Numbers and Volumes—The following numbers and volumes of the Scientific American, are for sale at this office, at the annexed prices:—Volume VI., Vol. VII, Vol. IX, and Vol. X, complete. Price, *bound*, per Volume, $2,75. Numbers in sheets, complete, $2. Of Volumes IX. and X., we have also about 40 numbers each, not consecutive, which will be sent by mail on receipt of $1.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Binding—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had TEN years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

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B. H. DAY, "Brother Jonathan Office,"
7 48 Beekman street, New York.

A 100 HORSE HORIZONTAL ENGINE for sale cheap—Heavy iron frame, fly wheel, pumps, heater, pipes, and a 15 feet driving drum, 4 feet face, attached to the fly wheel shaft. Apply to JOHN THURSBY & SONS, corner Remsen and Waterbury sts., Brooklyn, E. D. 7 2*

WANTED—A situation by a man that has superintended a pattern shop; is well acquainted with steam engines and mill machinery, etc.; is also a mechanical draughtsman, and is a steady man. Address Z. A., Louisville, Ky. 7 2*

FOR SALE—A good bargain is offered to any one in want of a Daniels Planer with all the late improvements, and warranted in every respect perfect. Apply at 68 Albany street, Boston. P. PEAK. 7 2*

NOTICE—The subscriber being desirous of renting a small mill with one or two sets of woolen Machinery complete for coarse goods, will find a customer by addressing Box 42, Worcester Post Office, Mass. 7 3

C. KIRCHHOF, Model Maker for Inventors, &c., has removed to 36 Duane street, near Broadway.—The number of successful models he has made are the best references as to his practical abilities, and his scientific and mechanical experience in the most varied branches. 6 2*

IRON WORKS FOR SALE—The Globe Iron Works, situated in, and extending from 33rd to 34th sts., and directly upon the line of the Hudson River Railroad and the North River. This property consists of nineteen lots of ground, with machine shop thereon, 140 feet by 60, and three stories high; a foundry 104 feet by 30; boiler shop 92 feet by 60, and brass foundry 25 feet by 15. The above were built about four years since, in the most substantial manner, all of brick, with slate roofs and copper gutters throughout, and for strength and durability are unsurpassed by any in the city; they were constructed with especial reference to locomotive, and heavy engine and mill work, and the location is admirably adapted to that business. The engines and boilers, and all the tools, with which the works are amply supplied, are of the most approved style and workmanship, and now in excellent running and working order. The tools will be sold either with or separate from the buildings and lots. For terms, &c., which will be made easy, inquire on the premises, or of G. B. HARTSON, 1028 Broadway, or A. SMITH, 174 West 23th street, New York. 4 4

WANTED—A Machine for making a miter dovetail on boxes. It was invented about twenty years ago, and is much used in making soap and candle boxes. A person having a good one will find a purchaser by addressing box 187. Harrisburg, Pa. 6 2*

SUPERIOR AND IMPROVED MACHINISTS' Tools can be obtained at short notice of CARPENTER & PLASS, foot of East 30th street, New York. 4 4*

MACHINISTS' TOOLS—Manufacturers, Mechanics and Railroad Supplies, Locomotive and Stationary Engines, Ashcroft's Steam Gauges, Boilers, Trip Hammers, Belting, Cotton and Woolen Machinery, Water Wheels, Pumps, Blowers, Wrought Iron Tackle Blocks, &c. FOSTER & LEACH,
3 13* 25 Broadway, N. Y.,

WROUGHT IRON PIPE—Boiler Flues, Globe Valves, Cocks, Steam Gauges, Gauge Cocks, Oil Cups, and every variety of fittings and fixtures for steam, water, and gas, manufactured and sold by JAMES O. MORSE & CO., No. 79 John st., N. Y 49 14*

MACHINISTS' TOOLS.—Meriden Machine Co. have on hand at their New York Office, 15 Gold street, a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 2 13*

CARPENTER'S ROTARY PUMP—The best, cheapest, simplest, and most efficacious pump in existence for all purposes. It has no valve, and no packing bouts its operating parts. Manufactured by D. C. HENDERSON & Co., Sandusky, O. 55*

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 3 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 1500 lbs., price $240; other sizes in proportion. 29 e3w

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DREDGING MACHINES AND EXCAVATORS—Suited to all sorts of excavation, under any circumstances, may be had of D. S. Howard, constructed after his latest improvements to suit any location, at prices varying from $5,000 to $50,000, according to size and capacity, &c. A good machine for the purpose of deepening channels from two to three feet to ten or twelve, capable of raising 1,000 cubic yards of clay into lighters, in ten hours, by the help of three men and one cord of good wood, or its equivalent in coal, will cost about $10,000, with all the conveniencies necessary for clearing channels of common excavations, and depositing it in lighters. For further particulars apply to Fruyn & Lansing, or A. Low, Franklin Foundry, Albany, N. Y., who will furnish machines on short notice.
6 2* D. S. HOWARD.

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N. B.—Reliable orders filled for any part of the United States and Europe. 4tf

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4 Sun Office, N. Y.

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IMPORTANT INVENTION—Patented August 14th, 1855. "Garratt's Metal" for Journal Boxes of all kinds. It is anti-friction, absorbs the oil, not liable to break, it can be made cheaper than either brass or Babbitt metal, and after many long and severe tests, has been found to surpass all other metals ever used for the purpose. For the purchase of either State, county or shop rights under this patent, apply to JOS. GARRATT, Senr., Madison, Indiana. 2 tf

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IMPORTANT TO ENGINEERS AND MACHINISTS—NOTICE—Those wishing to obtain the genuine articles of Metallic Oil and Grease, should send their orders direct to the manufacturer, AUGUSTUS YOCKNEY, Office 67 Exchange Place, New York. No Agents employed. 1 6m*

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
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Reference—T. D. Stetson, 19 Beekman st., New York.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

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Science and Art.

Improvement in Tailors' Measures.

On the 31st of October, last year, a patent was granted to John M. Krider, of Middletown Va., for an improved Tailor's Measure. The accompanying engravings illustrate this instrument, and its application to taking the measure of the human body for a coat; also the application of the Measure to cut out the various parts of the coat from the cloth, to make the garment of the person measured.

Figs. 1 and 2 show the application of the instrument to the front and back of a spry young gentleman of fashion and taste, and figure 3 shows the application of the instrument to set out the various parts of the cloth, according to the measure as taken and illustrated by figs. 1 and 2.

Various instruments for taking the measure of persons, in order to cut the cloth accurately for garments, have been used; but these, it is stated in the patent of Mr. Krider, have been defective, "by depending on the judgment in contracting the curved admeasurements, such as that arising in measuring from the arm pit to the collar and back seam, wherein the tape measure has two directions to give the curve, which must be uncertain when laid on the cloth as a plane." The object of this instrument is to secure a proper measure, independent of any exercise of the judgment, simply by an application of it to the body; and after the several measures are taken from fixed points, all of them can be transferred to the cloth. The lines measured over a curve on the body are flattened and applied to the cloth on a plane, and these are made to occupy the same place on the body in the coat as when measured by the instrument, thereby insuring perfect accuracy of fit.

P P represent the conspicuous parts of the instrument. It is first applied closely under the left arm pit, and secured with straps to the body. T is a protractor composed of a circle divided into degrees, and is placed upon a metal stud (like No. 1 and 2.) S, a metal tape of brass, is now directed to the point, F, fig. 2.—As the tape is connected with the protractor, the latter moves round, and the degree indicated in its line with the fixed pointer or index, R, is noted by the operator; also the length of tape line. The tape is next applied to B, a point on the spine in a horizontal line with stud No. 1. The degree indicated on the protractor and the length of tape are again noted. The protractor is now shifted to stud No. 2, and the tape, S, is carried to the back seam of the collar at point A. The specification of the patent states that "this is a cardinal point which no other instrument has established," and it is the most essential point of the garment. With the protractor, T, on stud No. 2, a measure is taken to the point, B, and the length of line intersecting the horizontal one is noted. The protractor is now shifted to stud No. 3, and a measure taken to G—the top of the lappel and end of the collar. The breast measure is now taken to H, and the length of waist in front to J. The tape, S, is now dropped down until it comes in contact with the check pin, 4. The distance is now taken from the stud to the back seam at C and D. The ring on the end of the tape, S, is now placed over stud No. 3, and a measure is taken over the shoulder to F. The length of the back seam from A to D is made with the ordinary measure.

TRANSFERING THESE MEASUREMENTS TO THE CLOTH—The cloth for the coat of the person measured is laid on a table, and on it is drawn a straight line for the back seam. On this the distance from A to B, and from the latter to C and D, are measured. A line is now run out at right angles to B C, and the instrument is slid on this line until the stud No. 1 indicates the distance from it to the center of the back. A weight is now placed on the instrument, and the several measures which have been taken as described are laid on the cloth, care being taken to shift the protractor from one stud to the other, as has been described. Every essential point will then be clearly set out on the cloth, as represented by fig. 3.

The strap used in securing P P to the body is carried back to the neck, then down in front and under the right arm to the short strap and buckle, where it is sufficiently tightened to keep the instrument close to the body. The main part of the instrument is made of two thicknesses of Morocco leather with fine Bristol board between them. This instrument is equally adapted to breast and back measurements without unbuckling, and possesses advantages over others.

More information may be obtained by letter addressed to the patentee, at Middletown, Frederick County, Va.

KRIDER'S PATENT FORM TRANSFER.

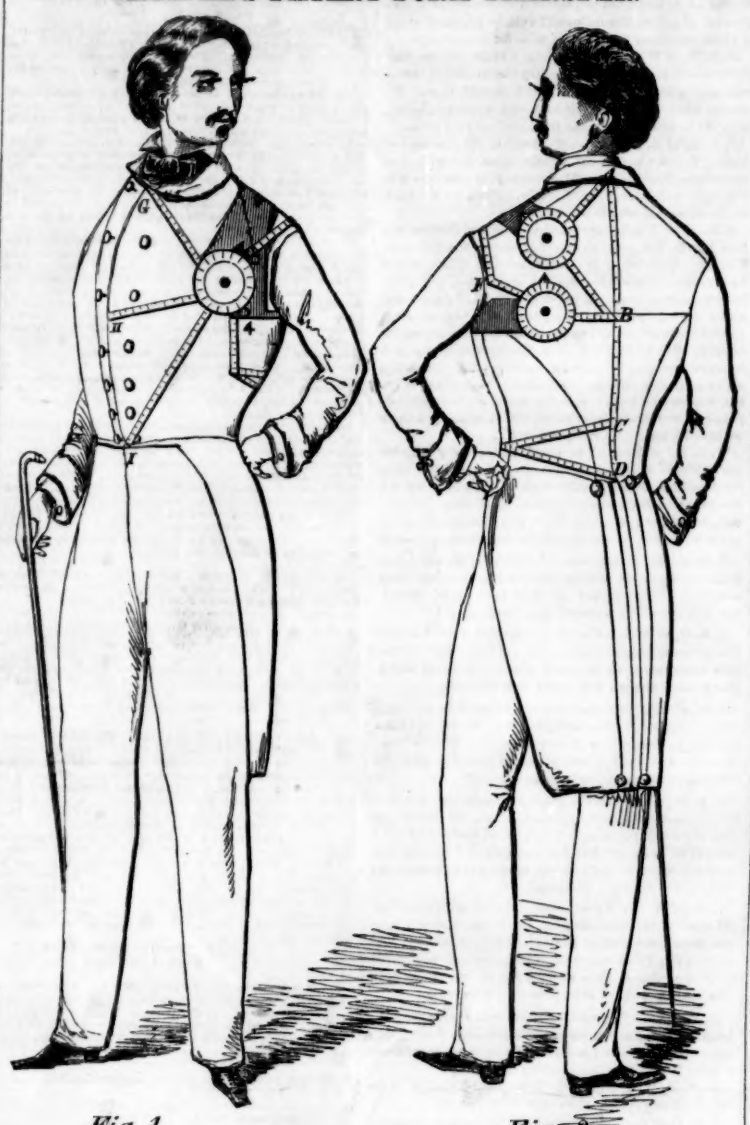

Fig. 1 Fig. 2

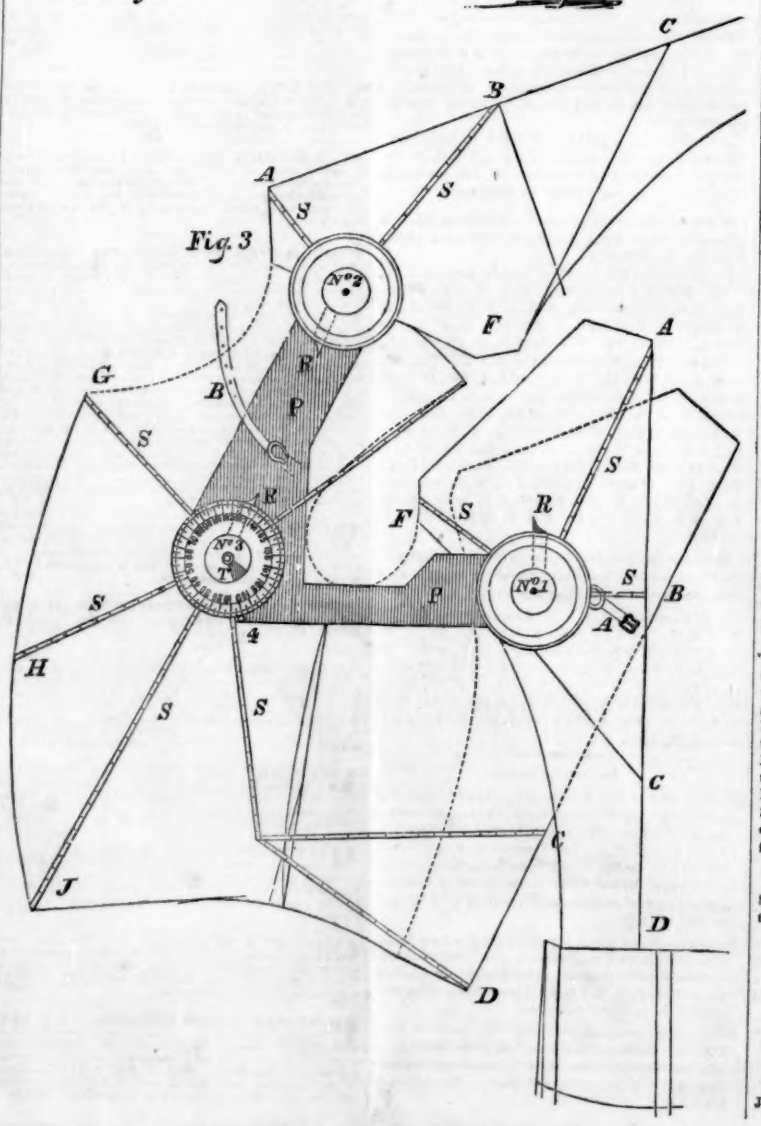

Fig. 3

Side Propellers.

Capt. H. Whittaker has published a long account of the performances of the side propeller *Baltic*, in the Buffalo, (N. Y.,) *Commercial Advertiser*, of the 11th inst. This is the first application, on a regular running steamboat, of side propellers, as substitutes for paddle wheels. Heretofore all propellers have been placed at the stern, but if it is a benefit to apply a paddle wheel at each side of a steamboat, or ship, why not a propeller? The *Hudson*, a paddle wheel boat of the same size as the *Baltic*, and also running on the same route, has an engine of four times the power, uses twice as much fuel, and yet does not average as much for receipts by fifty per cent. Capt. Whittaker asserts that the *Baltic* has more room for cargo, carries more, and makes better time than the *Hudson*. This is a subject worthy of the profound consideration of our marine engineers.

Reading in Railroad Cars Dangerous.

Several instances are lately recorded where persons who were in the habit of reading much in railway cars had become nearly blind, and an express agent near Boston had totally lost his sight, it being imputed to that cause. It appears the jolting motion causes the eye to strain in catching the separate letters, and makes their effect on the retina very injurious. —[Exchange.

MECHANICS

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